SCS ENGINEERS







INSPECTION PROTOCOL FOR CONSTRUCTION AND OPERATION OF LANDFILLS

OPERATION OF NEW SANITARY SOLID WASTE LANDFILLS

Presented to:

USAID DEL PUEBLO DE LOS ESTADOS UNIDOS DE AMÉRICA

CCAD COMISIÓN CENTROAMERICANA DE AMBIENTE Y DESARROLLO

ACUERDO DE COOPERACIÓN USAID - CCAD

Comision Centroamericana de Ambiente y Desarrollo

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PREFACE

Considering the current situation of the Central American region in environmental matters and the new commercial challenges derived from CAFTA-DR, the United States Agency for International Development (USAID), has signed with General Secretariat of the Central American System for Integration (SG-SICA) a Strategic Objective Grant Agreement for its new program in Central America and Mexico, that corresponds to the Intermediate Result called "Economic Freedom: Open diversified Expanding Economies". Since Central American Commission on Environment and Development (CCAD) is the active arm of SICA and the political reference in environmental matters, in this Agreement assume the responsibility of supporting the cooperation around the free trade agreement, for which it should coordinate and implement a series of actions in different thematic components, such as:

I. Strengthened Environmental Management Systems in CAFTA-DR countries.
II. Strengthened Capacities of the parts to comply with the environmental obligations of CAFTA-DR.
III. Compliance with improved environmental multilateral agreements.
IV. Use of increased clean production technologies.
V. Increase in inter-ministry coordination, building of capacities and communication
VI. Strengthen CCAD institutional capability and internal controls

The present Operation of new Sanitary Solid Waste Landfill Inspection/audit protocol is in line with Component I, Strengthened Environmental Management System in CAFTA-DR countries, which focuses in the implementation of regulatory environmental instruments that facilitate the compliance and law enforcement, technical capacity building, and analytical equipment in the laboratories; as well as the adoption of instruments of environmental incentive in each CAFTA-DR country.

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1.0 INTRODUCTION

This Operation of New Sanitary Solid Waste Landfills / Inspection Protocol for Construction and Operation of Landfills consists of procedures to be followed by the landfill personnel for day-to-day operations of a sanitary solid waste landfill facility that may also receive other wastes such as construction and demolition debris, special wastes, and other non-putrescible materials.

This document has been prepared for the Comisión Centroamericana de Ambiente y Desarrollo (CCAD) by SCS Engineers to provide guidance for operating a sanitary solid waste landfill. This manual is designed to assist private solid waste companies and municipalities as well as train environmental health inspectors on the proper techniques for the operation of new sanitary solid waste landfills.

This manual is intended to address municipal solid waste landfills only – not hazardous or un-treated medical waste landfills. For the purposes of this manual, municipal solid waste is waste resulting from or incidental to municipal, community, commercial, institutional, agricultural, mining, and recreational activities, including garbage, rubbish, refuse, sludge from a wastewater treatment plant, water supply treatment plant, ashes, street cleanings, dead animals, abandoned automobiles, treated medical waste and other discarded material including solid, liquid, semi-solid, or contained gaseous material.

Hazardous waste includes any solid waste which, because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, or disposed of, or otherwise mismanaged. These wastes may also cause or contribute to an increase in mortality or an increase in irreversible or incapacitating illness. Hazardous wastes types include ignitable, corrosive, reactive, and toxic wastes. These wastes are further identified and listed by the United States Environmental Protection Agency (U.S. EPA) under the Solid Waste Disposal Act. Additional information on hazardous waste can be found at http://www.epa.gov/osw/hazard/index.htm.

1.1 TRAINING

The Solid Waste Association of North American (SWANA) offers training and certifications for Manager of Landfill Operations (MOLO). This course provides a comprehensive study of efficient landfill operations, including landfill design, compliance with regulations, and issues to consider when planning, operating, and closing landfills. Additional information on SWANA's MOLO course can be found at http://swana.org/Education/Educate/Certification/Landfill/tabid/89/Default.aspx.

The International Solid Waste Association offers training and certification for the International Waste Manager Program. This program is designed to provide an internationally recognized certification for individual professional waste managers based on their academic achievements and their practical work experience. The certification has four levels of which three are designated as Intermediate, Advanced, and International, depending on how applicants meet the International Solid Waste Association criteria. The fourth Preliminary level was established to enable those with practical experience but lacking some academic level of qualification. Additional information on the International Solid Waste Association International Waste Manager Program can be found at:
https://www.iswa.org/fileadmin/user_upload/IWM_001_Brochure_rev007.pdf.

Figure 1: Aerial View of Operating Sanitary Landfill

1.2 PRE-OPERATION NOTICE

The landfill operator should provide written notice to the appropriate environmental Ministry in the form of a Liner Evaluation Report detailing the final construction and lining of a new disposal area or sector.

The reports are usually submitted for review prior to the placement of any waste.

1.3 RECORDKEEPING REQUIREMENTS

A copy of the facility permit, the landfill development plan, the final closure plan, post-closure care plan, landfill gas management plan, and any other required plans with related documents should always be maintained at the landfill office.

In addition, a landfill operating record should be established and maintained at the landfill office.

The landfill operator should place the following information in the landfill operating record:

- Any and all regulatory compliance documentation (such as Location Restriction Demonstrations);
- Inspection records, training procedures, and notification procedures relating to excluding the receipt of prohibited waste;
- All results from gas monitoring and any remediation plans relating to explosive gases;
- Any and all demonstrations, certifications, findings, monitoring, testing, and analytical data relating to groundwater monitoring and corrective action;
- Closure and post-closure care plans, and any monitoring, testing, or analytical data relating to post-closure requirements;
- Any and all cost estimates and financial assurance documentation relating to financial assurance for closure and post-closure;
- Copies of all correspondence and responses relating to the operation of the facility, modifications to the permit and approvals;
- Any and all documents, manifests, shipping documents, trip tickets, etc. involving special waste;
- Records of the application rate and total amount alternate daily cover applied to the working face on those days in which it is applied; and
- Any other document(s) as specified by the approved permit or by the environmental Ministry.

Recordkeeping requirements and recommendations are further summarized in Table 1:

Table 1: Recordkeeping Requirements and Recommendations

RECORDS NEEDED	FREQUENCY
Location Restriction Demonstrations	Prior to Constructing Landfill Cell
Prohibited Waste Inspection Records, Training and Receipt Notification Procedures	Per Occurrence
Landfill Gas Monitoring Results	Quarterly

Remediation Plans for Landfill Gases	Per Occurrence
Unit Design Documentation for Leachate or Gas Condensate Placement	As Required
Groundwater Monitoring, Testing & Analytical Data	Per Occurrence
Closure and Post-Closure Care Plans	Submittal of Permit Application
Post-Closure Monitoring, Testing and Analytical Data	Per Occurrence
Cost Estimates and Financial Assurance Documentation for Closure and Post-Closure of Landfill	Annually
Facility Operation, Permit Modification, Approvals, and Technical Assistance Correspondence & Responses	Per Occurrence
Special Waste Manifests, Trip Tickets and All Other Documents Relating to Special Waste	Per Occurrence
Other Documents Specified in the Permit or by the Environmental Ministry	As Needed
Personnel Training Records	As Needed
Unauthorized Material Removal	Per Occurrence
Landfill Marker Inspections	Monthly
Landfill Gas Management Reports and Submittals	Per Occurrence
Cover Inspection Record	Daily
Regulated Asbestos Containing Material Acceptance Records	Per Occurrence
Landfill Access Road Records	Monthly
Access Control Inspections and Maintenance	Monthly
Notices for Access Control Breaches and Repairs	Per Occurrence
Fire Occurrence Notices	Per Occurrence
Ponded Water Records	Monthly
Landfill Inspection and Maintenance Records	Per Occurrence
Daily Log of Litter and Debris Pickup along Public Road	Daily

Training records should be maintained as follows:

1. The job title for each position at the facility and the name of the employee filling each job;
2. A written job description for each position listed under Paragraph (1). This description must include the requisite skill, education, or other qualifications, and duties of employees assigned to each position;
3. A written description of the type and amount of both introductory and continuing training that should be given to each person filling a position listed under paragraph (1); and
4. Records that document that the required training or job experience has been given to, and completed by, facility personnel.

Training records on current personnel should be kept until closure of the facility and training records on former employees should be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

Records Management System

It is the responsibility of the landfill manager to maintain the facility operating record.

All information contained in the operating record should be available for inspection upon request by the environmental ministry. The landfill operator should retain the different plans required for the facility and all information contained within the operating record, for the life of the facility, including the post-closure care period.

Documents should be added to the operating record upon completion of the item or receipt of analytical data.

1.4 CRITICAL INSPECTION POINTS

Table 2: Landfill Recordkeeping Critical Inspection Points

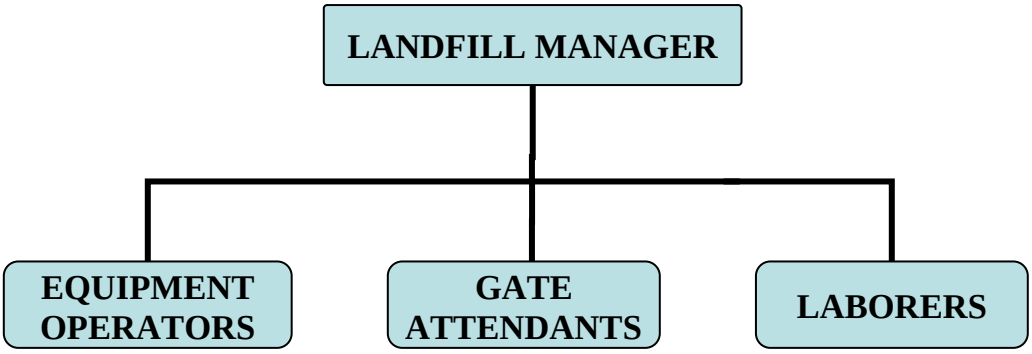
ITEM NO.	DESCRIPTION	WHEN	FREQUENCY
1	**Landfill Recordkeeping**		
1.1	Liner Evaluation Report for Current Disposal Cell	Prior to Disposal in Landfill Cell	One per landfill cell
1.2	Location Restriction Demonstrations	Prior to Constructing Landfill Cell	At least once per event
1.3	Prohibited Waste Inspection Records, Training and Receipt Notification Procedures	Per Occurrence	Per Occurrence
1.4	Landfill Gas Monitoring Results	Quarterly	Quarterly
1.5	Remediation Plans for Landfill Gases	Per Occurrence	Per Occurrence
1.6	Unit Design Documentation for Leachate or Gas Condensate Placement	As Required	As Required
1.7	Groundwater Monitoring, Testing & Analytical Data	Per Occurrence	Per Occurrence
1.8	Closure and Post-Closure Care Plans	Submittal of Permit Application	Submittal of Permit Application
1.9	Post-Closure Monitoring, Testing and Analytical Data	Per Occurrence	Per Occurrence
1.10	Cost Estimates and Financial Assurance Documentation for Closure and Post-Closure of Landfill	Annually	Annually
1.11	Facility Operation, Permit Modification, Approvals, and Technical Assistance Correspondence & Responses	Per Occurrence	Per Occurrence
1.12	Special Waste Manifests, Trip Tickets and All Other Documents Relating to Special Waste	Per Occurrence	Per Occurrence
1.13	Other Documents Specified in the Permit or by the Environmental Ministry	As Needed	As Needed
1.14	Personnel Training Records	As Needed	As Needed
1.15	Unauthorized Material Removal	Per Occurrence	Per Occurrence
1.16	Landfill Marker Inspections	Monthly	Monthly
1.17	Landfill Gas Management Reports and Submittals	Per Occurrence	Per Occurrence
1.18	Cover Inspection Record	Daily	Daily
1.19	Regulated Asbestos Containing Material Acceptance Records	Per Occurrence	Per Occurrence
1.20	Landfill Access Road Records	Monthly	Monthly
1.21	Access Control Inspections and Maintenance	Monthly	Monthly
1.22	Notices for Access Control Breaches and Repairs	Per Occurrence	Per Occurrence
1.23	Fire Occurrence Notices	Per Occurrence	Per Occurrence
1.24	Ponded Water Records	Monthly	Monthly
1.25	Landfill Inspection and Maintenance Records	Per Occurrence	Per Occurrence
1.26	Daily Log of Litter and Debris Pickup along Public Road	Daily	Daily
1.27	Training Records for All Employees	Per Occurrence	Per Occurrence

ITEM NO.	DESCRIPTION	WHEN	FREQUENCY
1.28	Records Management System (Facility Operating Record)	Per Occurrence	Per Occurrence

2.0 PERSONNEL

Landfill personnel include landfill managers, equipment operators, gate attendants, and laborers. The following organizational chart provides an example of the positions and personnel necessary to operate the landfill facility.

TYPICAL LANDFILL FACILITY ORGANIZATIONAL CHART



Landfill Manager

The landfill manager is responsible for all activities at the landfill and is the designated contact person for regulatory compliance matters. The landfill manager has the authority and responsibility to reject unauthorized loads and require unauthorized materials to be removed by the transporter.

The landfill manager is responsible for ensuring compliance of day-to-day operations with applicable regulations and operating permits. In addition, the landfill manager oversees all construction activities. The landfill manager ensures adequate staffing to provide facility operation in accordance with the appropriate regulations, and supervises equipment operators, gate attendants and laborers, and assign duties as necessary. The landfill manager is responsible for fire protection training of landfill employees according to Section 4.3 of this manual. The landfill manager is responsible for inspection and/or maintenance of all equipment and operating systems required under the permit (i.e., leachate collection system, methane gas collection system, etc.). The landfill manager serves as the emergency contact and coordinator for the facility, and is responsible for maintaining the Landfill Operating Record as well as required files and records. The landfill manager must be experienced with and have the aptitude to implement operational aspects of solid waste disposal operations including knowledge of relevant regulations and permit requirements, waste-handling and safe management practices for disposal of municipal solid waste, health and safety, and waste identification.

Equipment Operator

Equipment operators should be trained in the safe operation of landfill vehicles and heavy equipment. Their duties may include spreading and compacting waste and cover soil as needed for the placement and containment of waste, maintaining access roads, establishing and maintaining stormwater drainage, excavation of soils, and construction activities in accordance with the landfill development plan. Equipment operators are also be responsible for daily inspection of equipment for operational and safety conditions. They should visually observe waste loads as they are placed to help ensure that prohibited wastes are not deposited within the unit. If prohibited wastes are observed, the equipment operators should immediately notify the landfill manager. Equipment operators should also assist other landfill personnel in fire protection operations, moving of litter fences, and other duties as directed by the landfill manager.

The minimum qualifications for an equipment operator include a demonstrated proficiency in the operation of heavy equipment and the ability to comprehend and implement the training included in Section 4.1 of this manual.

Gate Attendant

The gate attendants are responsible for monitoring, documenting and measuring incoming waste and collection of appropriate fees. Duties may include selection of random loads for waste inspections in accordance with Section 4.2 of this manual, and directing waste loads to the appropriate disposal areas. The gate attendant is normally trained in safety procedures and the identification of prohibited wastes. If prohibited wastes are observed, the attendant should not allow the waste into the landfill and immediately notify the landfill manager.

The minimum qualification for a gate attendant includes a demonstrated ability to communicate with the customers and the ability to comprehend and use the gate house equipment (i.e., scales, computers, etc.) and the training included in Section 4.1 of this manual.

Laborer

Duties of landfill laborers may include on and off site litter control, fire protection operations, dust control, inspection and maintenance of perimeter fences and gate(s) and litter fences and other duties as necessary. Appropriate training should be provided commensurate to the duties and responsibilities of the laborer(s).

The minimum qualifications for a laborer include a demonstrated ability to comprehend the training included in Section 4.1 of this manual.

2.1 CRITICAL INSPECTION POINTS

Table 3: Personnel Critical Inspection Points

ITEM NO.	DESCRIPTION	WHEN	FREQUENCY
2	**Personnel**		
2.1	Landfill Manager	On Site When Landfill Operating	On Site When Landfill Operating
2.2	Equipment Operator	On Site When Landfill Operating	On Site When Landfill Operating
2.3	Gate Attendant	On Site When Landfill Operating	On Site When Landfill Operating
2.4	Laborer	On Site When Landfill Operating	On Site When Landfill Operating

3.0 EQUIPMENT

Heavy equipment available for day to day operations of the disposal areas usually consists of at least one landfill compactor, one bulldozer, earth moving equipment (scraper, excavator and dump trucks), and a water truck. When major repairs to heavy equipment are needed, the landfill operator or contractors should make additional equipment of similar size and function available.

Figure 2: Landfill Compactor

The landfill compactor is a wheeled compactor with appropriate cleats for sufficient compaction of wastes. The bulldozer must be capable of spreading solid waste and soils for cover, and performing construction maintenance of landfill roads. A water truck should be used for spreading water for dust control and fire prevention/protection. The earth moving equipment (i.e., loader and dump truck and/or scraper) should be capable of moving sufficient volumes of soil as necessary. Section 4.4.2 of this manual, Fire Protection Plan, contains operating standards for additional equipment requirements.

In addition to the required equipment listed above, the site may use a front end loader, motor grader, pickup trucks, and/or other light utility vehicles as well as various portable water pumps, instruments, and safety and training equipment. The pickup truck is used to haul landfill personnel within the landfill to conduct landfill duties and collect wind blown and spilled litter (both on and off site). A portable pump can be used for pumping storm water from excavations and from ponded areas.

3.1 CRITICAL INSPECTION POINTS

Table 4: Equipment Critical Inspection Points

ITEM NO.	DESCRIPTION	WHEN	FREQUENCY
3	**Equipment**		
3.1	Landfill Compactor	On Site When Landfill Operating	On Site When Landfill Operating
3.2	Bulldozer	On Site When Landfill Operating	On Site When Landfill Operating
3.3	Earth Moving Equipment (Scraper or Excavator and Dump Truck)	On Site When Landfill Operating	On Site When Landfill Operating
3.4	Water Truck	On Site When Landfill Operating	On Site When Landfill Operating
3.5	Pickup Truck	Optional	Optional
3.6	Water Pump	On Site When There are Excavations Requiring Dewatering	As Necessary
3.7	Other Equipment	Optional	Optional

4.0 GENERAL INSTRUCTIONS

The landfill facility is designed and constructed for disposal of solid waste and consists of separate phases. And each phase is constructed as the operations advance.

Operations should be conducted by qualified and trained personnel. Operational objectives consist of placing the maximum amount of waste in a specified area, and operating the landfill in compliance with the applicable regulations, the permit, and this manual.

Table 5 includes general instructions that the operating personnel should follow concerning the operational requirements of the facility.

Table 5: Facility Operations, Inspections, and Maintenance Requirements

DESCRIPTION OF ACTIVITY	TASK	FREQUENCY	INSPECTION DOCUMENTATION
Entrance Gate and Perimeter Fences	Conduct gate and perimeter fence inspection for any breach that has occurred. If breach occurs, follow procedures specified in Section 4.4.	Monthly	Note status on Access Inspection Log.
Cover Application	Record date of all daily, alternate daily, intermediate and final cover, how it was accomplished, and the last area covered.	Daily	Note cover application on Cover Application Record.
Perimeter Drainage Channel and Pond Maintenance	Inspect channels for litter and debris, clear flow-line. Inspect detention ponds for damage.	Monthly	Document inspections.
Random Load Inspection	Conduct inspection of selected vehicle to ensure that no unauthorized wastes are in the load.	Daily as specified in Section 4.2.3	Complete Random Load Inspection Report.
Unauthorized Material Removal	Document removal of unauthorized materials from the landfill.	Per Occurrence	Complete Unauthorized Material Removal form.
Leachate Collection System	Measure depth of leachate in sumps, storage tanks, and record volume of leachate removed from landfill.	Monthly	Maintain records of measurements.
Paint Filter Test	Conduct paint filter test on each basin of stabilized materials	Per Occurrence	Maintain paint filter test log.
Final Cover Inspection	Inspect final cover for erosion, damage to drainage structures.	Monthly	Document inspections.
Landfill Litter Collection	Inspect landfill for litter. Collect litter on a daily basis and return to the working face for proper disposal.	Daily	Document inspections.
Mud and Debris Cleaned from Public Roads	Inspect public roads for evidence of mud and debris tracked from the landfill	Daily during periods of rainy weather	Document inspections.
Fire Extinguishers/Fire Fighting Equipment	Inspect all fire extinguishers and/or fire fighting equipment, promptly repair or replace defective equipment.	Annually	Properly mark tags on fire extinguishers, document inspections.
Markers and	Inspect markers and benchmark for	Monthly	Document inspections.

Benchmarks	damage. Replace removed or destroyed markers within 15 days of removal or destruction.		
Roadway Re-grading	Inspect landfill access roadways to ensure a clean and safe condition	Monthly	Document inspections.
Site Signs	Inspect all site signs for damage, general location, and accuracy of posted information	Annually	Document inspections.
Odor	Inspect the perimeter of the site to assess the performance of site operations to control odor	Daily	Document inspections.
Ponded Water	Inspect site for potential ponding of water and ponded water. Fill and grade low areas as soon as practical.	Monthly	Document inspections.

All records and documentation should be maintained in the landfill facility's site operating record. All inspections are conducted by the landfill manager or a properly trained designee.

4.1 PERSONNEL TRAINING

It is the responsibility of the landfill operator to ensure that the landfill manager at the site is knowledgeable in the proper operation of a municipal solid waste landfill and the current operational standards required by this manual and the environmental Ministry. It is the responsibility of the landfill manager to ensure that all landfill personnel are properly trained and are operating the landfill in accordance with operational standards required by the permit and the environmental Ministry solid waste regulations.

Training for personnel should be ongoing and directed by a person trained in waste management procedures. Facility personnel should be instructed in the required waste management procedures relevant to the positions in which they are employed. At a minimum, the training program should ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including, where applicable:

- Procedures for notifying appropriate personnel in the event of an emergency
- Training in use of facility emergency response and monitoring equipment;
- Communications or alarm systems;
- Training in response to fires or explosions, hot loads, hazardous weather conditions; and
- Shutdown of operations.
- New employees should receive a comprehensive overview of landfill operations and specific training commensurate with their position, focusing on information that is necessary to protect the health and welfare of the new employee and enable them to perform their duties in accordance

with operational standards required by the permit, and environmental Ministry solid waste regulations.

Following the initial training, the additional employee training should continue in the form of periodic on-the-job training. Training meetings should be scheduled and conducted for employees annually. Topics for training may vary depending on job requirements.

The landfill manager, equipment operators, gate attendants, laborers, and recycling facility attendants should be trained on the topics as described in Table 6.

Table 6: Personnel Training Requirements

Position	Job Description	Site Orientation	Site Operations	Hazardous Waste Identification	Safety (job specific)	Fire Prevention	Prohibited Wastes	Fuel and Oil Spill Control and Countermeasures	Emergency Response	Litter Control	Random Inspection	Leachate System Maintenance	Asbestos
Landfill Manager	Responsible for all activities Ensure adequate staffing Inspections	X	X	X	X	X	X	X	X	X	X	X	X
Gate Attendant	Take receipts Waste screening Direct vehicles to unloading area	X			X	X	X		X		X		X
Equipment Operator	Compact waste Visual inspection of loads Unauthorized waste Apply daily cover	X		X	X	X	X	X	X		X	As Assigned	X
Laborer	As assigned	X			X	X			X	X			

More detailed written descriptions of the type and amount of introductory and continued training provided to each employee should be maintained in the facility operating record. Further, facility personnel must take part in an annual review of their initial training.

All documentation of training should be placed in the facility's site operating record.

4.2 CONTROL OF PROHIBITED WASTE

The landfill operator should implement a comprehensive program for waste screening that minimizes the potential for inadvertent acceptance of prohibited wastes. The program consists of four primary elements as follows:

1. Special/Industrial Waste Screening Program: prescreening customers bringing special waste and industrial waste to the facility. A detailed description of the special waste screening process is provided in the following Section.
2. Random Load Inspections: The facility should implement a minimum of 5 random load inspections per week.
3. Prohibited Waste Training Program: Training is provided to gate attendant personnel and equipment operators annually on prohibited waste recognition. This training plan is described in more detail in the following sections.
4. Gatehouse Waste Screening Program: During hours of operation, the gatehouse should be staffed with at least one gate attendant. The attendant screens incoming residential customers to help ensure that no prohibited wastes are being brought to the landfill. In addition, a sign should be placed in a conspicuous location that lists wastes that are prohibited for acceptance at the landfill. A detailed description of the Gatehouse Waste Screening Procedures is described in the following sections.

These procedures should minimize the potential that hazardous or otherwise unacceptable waste is received by the site for disposal. Implementation of the program provides protection from the potential dangers that prohibited waste could pose to employees, the public, or the environment through improper management, and serves as a hazardous waste and polychlorinated biphenyls (PCB) waste screening mechanism that minimizes the potential of these waste streams entering the landfill. These programs specifically require pre-acceptance screening procedures be followed to determine if a particular waste is non-hazardous and to determine the acceptability of the waste pursuant to facility permit conditions, applicable regulations, and operating capabilities. These programs are implemented in a number of ways, including review of waste streams prior to acceptance, monitoring under the supervision of qualified site personnel of waste arriving at the gate, and observance of the waste being disposed of at the working face by equipment operators.

Figure 3: Prohibited Waste Screening Station

The following sections discuss in detail the methods and procedures that should be used to control prohibited wastes at the site.

4.2.1 Detection and Prevention of the Disposal of Regulated Hazardous Waste

Regulated hazardous waste, as defined by U.S. EPA (see http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr261_main_02.tpl), PCB wastes (see http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr761_main_02.tpl, and other wastes specifically excluded for acceptance should not be accepted at the facility. Procedures to detect and prevent these types of wastes from entering the site include:

- Informing facility customers of prohibited wastes by posting one or more signs at the facility entrance listing prohibited wastes;
- Providing customers (regular and on-time or occasional) with a written list of prohibited wastes;
- Providing vehicle drivers of incoming waste from transfer stations and transfer station operators with a written list of prohibited waste;
- Screening of waste streams prior to acceptance;
- Random inspections of incoming loads in accordance with procedures described in Section 4.2.3;
- Rejecting loads that are suspected of containing prohibited waste;
- Trained staff observing each load that is disposed of at the facility;

- Maintaining records of all inspections;
- Training for appropriate facility personnel responsible for inspecting or observing loads to recognize prohibited waste, including regulated hazardous waste or PCB waste; and
- Remediation of any prohibited waste, regulated hazardous waste or PCB waste discovered at the site in accordance with Section 4.2.4 of this manual.

4.2.2 Prohibited Wastes

The acceptance and disposal of the following wastes should not be allowed at this site:

- Regulated Hazardous Waste (as defined by the appropriate environmental Ministry regulations).
- PCBs as discussed in Section 4.2.1 of this manual.
- Used motor vehicle oil.
- Lead acid batteries.
- Whole used or scrap tires.
- Items containing chlorinated fluorocarbons, such as refrigerators, freezers, and air conditioners, should only be accepted at the site if the generator or transporter provides written certification that the chlorinated fluorocarbons have been evacuated from the unit and that it was not knowingly allowed to escape into the atmosphere. The site operator should verify that the refrigerant has been evacuated from the appliance.
- Liquid waste (any waste material that contains "free liquids" as determined by the Paint Filter Test (EPA Method 9095, http://www.epa.gov/epawaste/hazard/testmethods/sw846/pdfs/9095b.pdf), should not be disposed of unless it is:
    - Bulk or non-containerized liquid such as:
        - Household waste (small containers normally found in the home).
        - Leachate or gas condensate derived from the site and re-circulated into the landfill.
- Used oil filters.
- Special wastes unless they have prior approval from the landfill manager and are accompanied by relevant analytical test results, Material Safety Data Sheet (MSDS) documents, or process knowledge documentation.

Landfill personnel should check for indications of prohibited waste as detailed below.

One of the most important means to control the disposal of prohibited waste is by the control of access by unauthorized vehicles. This issue is addressed in Section 4.4 of this manual regarding Access Control. Facility personnel should be trained to inspect vehicles and identify regulated hazardous waste, PCB waste and any prohibited waste described above. At a minimum, the gate attendant and equipment operators at the working face should be trained in screening and inspection procedures for prohibited waste. The personnel should receive on-the-job training basis by the landfill manager. Records of employee training on prohibited waste control procedures should be maintained in the facility site operating record.

Additionally, the facility should inform customers of prohibited waste restrictions by posting one or more signs at the facility entrance listing prohibited wastes.

If landfill personnel suspect prohibited waste is present in an incoming load, that load should be directed to an area out of the flow of traffic, and trained personnel should further assess the load. If the load is determined to contain prohibited waste, or if there is any suspicion that it may contain a prohibited waste, the load should be rejected and directed back to the generator. Documentation of the inspection should be placed in the site operating record. The documentation should include the date, time, name of the inspector(s), type of inspection/screening (i.e., suspected prohibited waste), transporter/generator information, and waste information. This documentation may be provided in a waste discrepancy report. A typical form is included in Appendix B of this manual.

Landfill gate attendants should be trained to help recognize incoming loads that are potential sources of prohibited waste such as electronic companies, metal plating industry, automotive/vehicle repair service companies, and dry cleaning establishments.

4.2.3 Random Inspections

The gate attendant or other designated landfill personnel should randomly select a minimum of five vehicles per week (including compactor vehicles) for inspection by notifying the equipment operator and directing the selected load to the inspection area of the working face. Once the selected load arrives at the working face, the equipment operator directs the vehicle to a separate but adjacent location on the working face and out of the flow of normal disposal traffic. The driver should discharge the load onto the ground where a trained individual can visually inspect the contents of the load and document the presence of any prohibited waste observed. A Load Inspection Report Form should be used to document results of the random load inspection. If prohibited waste is observed, it should be returned to the transporter and

the transporter should be instructed as to which facilities are permitted to accept the prohibited waste. The landfill manager should be notified of any incident involving the receipt or disposal of regulated hazardous waste or PCB waste at the landfill.

Loads that are excluded from random inspections are:

- Waste from transfer stations, providing that the transfer station conducts random screening;
- Liquid waste; and
- Asbestos waste.

Following waste inspections, documentation of the inspection should be placed in the site's operating record. The documentation includes information such as the date and time of inspection, name and signature of the inspector, type of inspection/screening (i.e., random screening, suspected unauthorized waste, etc.), transporter/generator information (including hauling company name and license plate number), source of waste, contents of load as reported by driver, contents of load as observed by inspector, and approval or disapproval of the load. This type of documentation may be provided on a waste inspection/screening form such as the ones included in Appendix B of this manual. This inspection report should be placed in the site operating record.

4.2.4 Prohibited Waste Remediation Plan

Remediation procedures may range from rejecting the load at the gate, loading prohibited waste back onto generator's vehicle to loading waste in a container, tarping, testing, and removal of the waste to an off-site approved facility. Upon determination that a waste is a prohibited waste and should not be accepted, the landfill operator should make arrangements for returning such waste to the generator and/or coordinating transportation to a facility approved for the specific waste in question. Drums should be marked appropriately with words for the type of prohibited waste it contains, such as "Hazardous Waste" or "Polychlorinated Biphenyls (PCB)". Remediation procedures for the incident should be documented and included in the facility operating record.

4.2.5 Liquids Restrictions

The landfill should not accept bulk or non-containerized liquid waste unless it is household waste other than septic waste. The restriction of bulk or non-containerized liquids, with the exception of household waste other than septic waste, is intended to control a source of leachate. Liquid waste refers to any waste

that is determined to contain free liquids by using U.S. EPA Test Method 9095 – Paint Filter Liquids Test http://www.epa.gov/epawaste/hazard/testmethods/sw846/pdfs/9095b.pdf.

If permitted by the regulations, the facility may recirculate leachate or gas condensate waste into landfill disposal areas with composite liners. Containers holding liquid waste should not be placed in the landfill unless they are small containers of household waste. The facility should not accept bulk liquids, such as tank trucks of liquid waste.

The facility may accept liquid sludges, grease trap waste, and liquid waste from other municipal sources for processing in accordance with Section 4.23 of this manual.

4.3 FIRE PROTECTION PLAN

This plan includes landfill fire protection standards and landfill personnel training requirements.

Operational activities at the landfill may include the storage, processing and disposal of combustible materials which may pose an increased fire hazard or risk. In many cases, materials such as used tires, brush and wood, or recyclables, are located in open, uncovered piles. These piles may be located near used oil or fuel storage areas, or other combustible materials such as trees, unmaintained grasses, vehicles, and buildings.

4.3.1 Fire Protection Standards

The following steps should be taken regularly to minimize the potential for fires:

- No burning of solid waste should be permitted;
- Burning or smoldering waste should not be dumped in active areas of the landfill. The gate attendant and equipment operators are trained to observe for hot loads entering the landfill by observing for signs of burning waste such as smoke, steam, or heat being released from incoming waste loads.
- Fuel spills are contained and cleaned up immediately.
- Dead trees, brush, or vegetation adjacent to the landfill are removed, and grass and weeds cut down so that forest, grass, or brush fires cannot spread to the landfill.
- Smoking is not allowed.
- A source of soil or clay to cover the working face is maintained in such a manner that it is available at all times to the working face or active disposal area for fire protection.

- When a fire occurs it should be promptly extinguished using the procedures described in this manual; and
- The potential for fires should be minimized by use of cover soils, and caution when using equipment capable of starting a fire.

4.3.2 Operating Practices

Operating practices related to fire protection should include methods to minimize the potential for accidental fires. Employees should be instructed in the control of small fires. All vehicles (including heavy equipment) should have fire extinguishers mounted and easily accessible to vehicle operators. Fire extinguishers should be regularly inspected, tagged and maintained ready for use.

Figure 4: Fire Hydrant and Fire Extinguisher

To reduce the possibility of fire and improve the operation of the landfill, a minimum of six inches of "daily" cover soil should be placed and compacted over exposed waste at the end of each working day or at least once every 24 hours in accordance with Section 4.21 of this manual.

The landfill manager should coordinate with the local Fire Department to provide a tour of the facility and provide a detailed Layout Plan of the facility which locates the areas with combustible materials (i.e., the

active working face, the brush/wood storage area, recycling facility, construction and demolition debris processing area, and fuel/oil storage areas). The plan should also specify alternative access points and sources of water.

The following procedures should be followed in the event of a fire at the facility:

- Small fires – Use a hand-held fire extinguisher or the area may be watered down or smothered with soil to ensure the fire is out.
- Equipment Fires – If a fire occurs on a vehicle or piece of equipment, the equipment operator should bring the vehicle or equipment to a safe stop away from fuel supplies, uncovered solid wastes, and other vehicles. The engine should be shut off and the brake engaged to prevent movement of the vehicle. Use the hand-held fire extinguisher which should be mounted on all vehicles or equipment.
- Hot Loads – Burning waste should not be unloaded in the active area of the landfill. After the gate attendant, equipment operator, recycling facility attendant or other landfill personnel have identified signs of a possible load of burning waste, or a hot load, the truck should be directed to a portion of the disposal area away from the working face, fuel areas, and other combustion sources where the load can be unloaded without danger of spreading fire. A water truck should water down the waste. The bulldozer should then spread the waste for additional water or cover of soil. The bulldozer may smother the fire with soil if the water does not sufficiently extinguish the fire. The waste should be inspected for signs of fire or hot spots. When the fire has been extinguished and the waste has cooled, the waste can be transferred to the landfill for disposal.
- If a fire is on the working face, the burning area should be isolated and pushed away from the working face quickly, or fire breaks should be cut around the fire before it can spread. If this is not possible or unsafe, efforts to cover the working face with earthen material must be initiated immediately to smother the fire. All vehicles and equipment should be immediately moved away from the fire until the fire is extinguished. Incoming waste loads should be stopped until the fire is extinguished.

Equipment such as bulldozers, earthmoving equipment, and water trucks should mobilize to the area of the fire or the location of the soil stockpile. All available landfill personnel should be available to assist with fire protection measures unless otherwise directed by the landfill manager.

A source of earthen material should be maintained on the landfill in a manner that is available at all times to extinguish any fire, and equipment should be available on highest priority basis for use in placing earthen material to extinguish fire should one occur. The source of earthen material should be sized of

sufficient volume of earthen material to cover a potential fire area equivalent to the size of the working face.

If the working face diversion and/or containment berms are used to control a fire, disposal operation should not recommence until the berms are rebuilt or new berms and a new working face are established elsewhere on the landfill.

When a fire is discovered the landfill manager should be notified, soil from the earthen material source should be loaded and carried to the area with the earth moving equipment and spread using a bulldozer or other appropriate equipment.

4.3.3 Fire Protection Training

To minimize hazards regarding fire, employees should be instructed in the control of small fires. Training of employees should be the responsibility of the landfill manager and should be provided to each new employee as part of the employee training program. A review of fire control measures for all landfill personnel should be conducted on an annual basis. All fire extinguishers and/or fire-fighting equipment at the landfill should be inspected and tagged annually, and any equipment found to be defective should be promptly repaired or replaced. At a minimum, each landfill and recycling facility employee should be trained for the following:

- Emergency notification requirements.
- Preventative measures to minimize or prevent the possibility of fire;
- Use of fire extinguishers or other equipment properly; and
- Procedures to extinguish fire with soil (equipment operators only).

4.4 ACCESS CONTROL

Access to the landfill should be controlled by means of artificial or natural barriers. Access to the facility should include a combination of fencing and a gated entrance. The entrance gate should be designed to provide complete access restriction when the landfill is not open, yet allow room for vehicles to pass through when the landfill is open. The entrance gate should be inspected periodically for damage. The fence and gate should be repaired, maintained, or replaced as needed basis to ensure proper security.

All landfill users should be required to stop at the scale house and conduct appropriate business transactions prior to proceeding to the disposal area(s). Unauthorized vehicles should not be allowed to proceed past the gatehouse. At this point, the vehicles are screened for waste type, in accordance with Section 4.2 of this manual. If a load is identified as containing any unauthorized hazardous, special, or industrial waste, the load should be rejected.

Figure 5: Landfill Scale House

To prevent the entry of livestock, and to discourage unauthorized entry to the landfill, the landfill perimeter should be protected with a combination of fencing including 1.8-meter chain-link and/or a one meter (minimum) three-strand barbed wire fence along all boundaries. The fence should be inspected on a monthly basis, with repairs made as necessary. A log of access control inspections should be maintained. The fence, gate, and signs should be repaired, maintained, or replaced on an as needed basis to ensure proper security.

If the fence or gate access control system is breached, or if there is a hole or gap in the fence or the gate is not restricting access, the breach should be repaired within as soon as possible.

4.5 UNLOADING OF WASTE

The unloading areas at the facility may include the following:

1. Municipal solid waste should be unloaded at the active working face;
2. Brush and other wood material should be unloaded at the brush/wood storage area;
3. Asbestos waste disposal areas for receipt of regulated asbestos containing material;
4. Construction and demolition waste may be unloaded at a working face on the landfill;
5. Tire area; and
6. Recycling area.

There may be one or more active working faces, brush/wood unloading area, a construction and demolition waste unloading area, a liquid waste unloading area, a tire area, an asbestos waste disposal area for receipt of regulated asbestos containing material, and a recycling area.

Figure 6: Commercial and Residential Customers Unloading at Working Face

The unloading of solid waste at the active working face should be confined to as small an area as practical. Every effort should be made by landfill personnel to maintain the size of the active working face to a maximum length of 100 meters and width of 50 meters. The size of the working face should be directly impacted by the amount of wastes being received and may vary accordingly. There may be one or two active working faces open at any given time. Examples of when more than one working face may be open at one time is when large waste trucks are being separated from smaller waste vehicles for safety purposes, when wastes are being deposited in a new cell that must receive only select wastes to cover the bottom of the new cell, during a transition from a wet weather area to another working face, during

disposal of regulated asbestos containing materials or when there is a "hot load" delivered to the working face area and another municipal solid waste working face is established until the fire is controlled. However, in general there should only be one or two active working faces in order to reduce odors and windblown waste and to control vectors.

The unloading of waste in unauthorized areas should be prohibited. Any waste deposited in an unauthorized area should be promptly removed and disposed of properly. A trained employee should be present at the gatehouse at all times during operating hours to monitor incoming loads of waste, and should direct traffic to the appropriate unloading area. Trained personnel should also be on duty during regular operating hours at the working face to direct and observe unloading of solid waste. The working face staff as well as the gate attendants should contact the landfill manager regarding the receipt of prohibited wastes. The landfill manager has the authority and responsibility to reject unauthorized loads, have unauthorized material removed by the transporter, and/or assess appropriate surcharges, and have the unauthorized material removed by landfill personnel or otherwise properly managed by the facility. The employees should be trained in the recognition of both industrial and hazardous waste and their transportation and disposal requirements. A record of unauthorized material removal should be maintained in the operating record. The facility is not required to accept any solid waste that may cause problems in maintaining compliance with the permit.

Certain wastes should be prohibited from disposal at the facility. Prohibited wastes include hazardous waste, PCB waste, and unauthorized special waste. The known disposal of prohibited wastes at the landfill should not be allowed. Necessary steps should be taken by the landfill operator to ensure compliance with this provision as discussed in Section 4.2 of this manual. Any prohibited waste should be returned promptly to the transporter or generator of the waste. The driver should be advised and should be responsible for the proper disposal of this rejected waste. In the event the unauthorized waste is not discovered until after the vehicle that delivered it is gone, the waste should be segregated and controlled as necessary. An effort should first be made to identify the entity that deposited the prohibited waste and have them return to the landfill and properly dispose of the waste. In the event that identification is not possible, the landfill manager should notify the regulatory Ministry and seek guidance on how to dispose of the waste.

Only those persons operating vehicles that comply with the following requirements should be authorized by the landfill manager to dispose of waste at this landfill:

1. Vehicles and equipment used for the collection and transportation of waste in good working order to prevent loss of waste material and to minimize health and safety hazards to landfill personnel and the public;
2. Collection vehicles and equipment maintained in a sanitary condition to preclude odors and fly breeding; and
3. Collection vehicles not equipped with an enclosed transport body should be required to have tarpaulins to preclude accidental spillage.

Figure 7: Collection Truck with Non-Enclosed Transport Body Applying Tarpaulin

Signs with directional arrows should be used direct traffic to designated disposal locations. Signs should be placed along the access route to the current disposal area or other designated disposal areas that may be established. Portable traffic barricades may also be utilized to direct traffic to the designated disposal locations. In addition, rules for waste disposal and prohibited waste should be prominently displayed on signs at the landfill entrance.

Brush and wood may be stored at the landfill for mulching or composting. The brush/wood storage area should remain free of putrescibles and household wastes.

Whole tires or tire pieces may be stored or processed at the landfill in an unused portion of the property. Storage should be above ground in controlled storage piles or in enclosed containers. The landfill should not store tires or tire pieces in excess of 500 used or scrap tires. The tire storage area should remain free of putrescibles and household wastes.

4.6 HOURS OF OPERATION

The landfill's waste acceptance hours are typically Monday through Friday, 7:00 a.m. to 5:00 p.m. and Saturday, 7:00 a.m. to 4:00 p.m. These hours are recommendations only, the landfill manager may decide what days and what hours the landfill is open for waste acceptance. Actual facility operating hours in effect at any given time should be posted at the facility entrance.

4.7 LANDFILL SIGN

A conspicuous sign measuring a minimum one meter by one meter should be maintained at each public landfill entrance. The sign should state, in letters at least 7 cm high, the name of the landfill and the hours and days of operation. The sign should have an emergency 24-hour contact phone number(s) that reach the landfill manager of the facility at all times that the facility is closed, and the local fire department phone number. The facility sign should be readable from the entrance. A sign prohibiting receipt of hazardous waste, closed drums, and smoking should be posted near the facility entrance or gatehouse. A sign stating that all loads should be properly covered or otherwise secured should be prominently displayed at the facility entrance.

Within the landfill, additional signs should be placed along the landfill haul road and access road directing customers to where disposal areas are and which roads are to be used.

4.8 CONTROL OF WINDBLOWN SOLID WASTE AND LITTER

The working face should be maintained and operated in a manner to control windblown solid waste. The working face should be covered daily to avoid prolonged exposure of waste. In order to prevent disease vectors, control windblown debris and odors, reduce the possibility of fire, prevent scavenging, and improve the operation of the landfill, a minimum of six inches of "daily" cover soil should be placed and compacted over all exposed waste at the end of each working day.

Figure 8: Portable Litter Fence

Figure 9: Litter Fence

Weather conditions may result in material occasionally being blown away from the working face during placement operations.

Litter fences of adequate height and width should be located and utilized in the immediate vicinity of the working face to help aid in the control of windblown material as needed. The landfill manager should be responsible for determining the need, type and placement of litter fences. Litter fences should either be portable, free-standing fences which can be readily moved, as necessary, with equipment, or they may be temporary fences which consist of poles driven into the waste/soil cover with fencing between them. Typically, the litter fences are placed downwind and extend the full width of the working face and extend above the working face. Windblown waste and litter at the working face should be collected and properly managed to control unhealthy, unsafe, or unsightly conditions. The collected waste should be returned to the active disposal areas. Litter scattered throughout the landfill, along fences and access roads and at the gate should be picked up once a day by landfill personnel, and returned to the active working face.

4.9 EASEMENTS

No waste unloading, storage, disposal or processing operations should occur within any easement that crosses the landfill. There are no rights-of-way within the permit boundary. No solid waste disposal should occur within 7 meters of the centerline of any utility line or pipeline easement. All pipeline and utility easements should be clearly marked with green colored posts that extend at least 1.8 meters above ground level, spaced at intervals no greater than 100 meters.

4.10 LANDFILL MARKERS AND BENCHMARKS

All required landfill markers and benchmarks should be maintained so that they are visible during operating hours. Markers that are removed or destroyed should be replaced within 15 days of their removal or destruction. All markers should be repainted as necessary to retain visibility. It is the responsibility of the landfill manager to ensure that landfill markers and benchmarks are inspected for damage on a monthly basis. Records of all inspections should be maintained at the facility operating record.

Landfill markers should consist of durable posts, steel or wooden, extending at least 1.8 meters above ground level to clearly identify significant landfill features such as landfill boundaries, easements and rights-of-way, landfill grid system, and limits of constructed landfill liner, if applicable. In the event a marker falls in a roadway, waterway or other area incapable of sustaining it, an alternate marker may be placed with its offset from its true location noted on the marker. All markers should be color coded as indicated in the chart below.

Table 7: Landfill Marker Color Chart

Marker	Color
Landfill Boundary	Black
Easements	Green
Grid System	White
Constructed Landfill Liner	Red

4.10.1 Easement and Road Right-of-Way Markers

Easement and right-of-way markers (Green) should be placed along either the centerline or the limits of an easement and along the boundary of a roadway right-of-way at intervals of 100 meters and at each corner within the landfill and at the intersection of the landfill boundary. If a utility line has been constructed down the centerline, the marker may be off-set on the easement or right-of-way. This off-set should be noted on the landfill grid system drawing and the marker.

4.10.2 Landfill Grid System Markers

A landfill grid system (White) should be installed at the facility. The grid system should encompass at least the area expected to be filled within the next 1 year period. Markers should be spaced no greater than 30 meters apart measured along perpendicular lines. Where markers cannot be seen from opposite boundaries, additional markers should be installed.

4.10.3 Limits of Constructed Landfill Liner Markers

Limits of constructed landfill liner markers (Red) should be placed so that all areas for which a landfill liner has been constructed. Such markers are to provide landfill workers immediate knowledge of the extent of disposal areas. These markers should be located so that they are not destroyed during operations until operations extend into the next area of constructed landfill liner. The constructed landfill liner markers should not be placed inside the evaluated areas.

4.10.4 Landfill Boundary Markers

Landfill boundary markers (Black) should be placed at each corner of the landfill and along each boundary line at intervals no greater than 100 meters. Fencing may be used in place of these markers as appropriate.

4.10.5 Permanent Benchmark

A permanent benchmark should be established at the landfill. The benchmark monument should established at the landfill in an area that is readily accessible and not be used for disposal. The monument elevation was surveyed from a known reference benchmark. The monument should be a metal marker set in concrete with the benchmark elevation and survey date stamped on it.

4.11 MATERIALS ALONG ROUTE TO LANDFILL

The landfill operator should take the necessary steps to help ensure that vehicles hauling waste to the landfill are enclosed or utilize a tarpaulin, net, or other means to properly secure the load in order to prevent the escape of any part of the load by blowing or spilling. The landfill operator should include, as necessary, the posting of signs at the landfill entrance requiring the loads to be enclosed or covered, adding litter control surcharges, or other necessary information which may minimize non-compliance. On a daily basis and during daylight hours when the facility is in operation, roadways should be inspected and picked for litter daily for a distance of three (3) kilometers in either direction from any entrances used for the delivery of waste to the landfill.

As necessary, litter found along the routes to the landfill should be picked up by landfill personnel or other persons acting in coordination with the landfill operator. The landfill pickup and personnel should be utilized to gather the litter, secure it on the vehicle and transport it back to the landfill for proper disposal. Litter control outside the landfill should not be conducted during hours of darkness. It should be the responsibility of the landfill manager to ensure that litter control outside the landfill is conducted in a safe and timely manner. The landfill manager should make proper arrangements to gather items that are too large to be picked up by conventional means. The landfill manager or designated alternate should record cleanup efforts on a daily log which should be maintained in the landfill operating record.

4.12 DISPOSAL OF LARGE ITEMS

Large, heavy, or bulky items such as air conditioning units, tree trunks, white goods, metal tanks and metal pieces which cannot be incorporated in the regular spreading, compaction and covering operations should be recycled or crushed by compacting equipment to prevent bridging and localized subsidence. White goods may be recycled, and tree parts (i.e., limbs, trunks and stumps) and brush and wood may be chipped for mulch or compost. Items identified as being too large for proper disposal should be refused or broken into smaller pieces, or crushed by compactor equipment, for proper disposal. A special area

may be designated as a large item salvage area as discussed in Section 4.17 of this manual. These items would be removed from the landfill frequently to prevent them from becoming a nuisance and precluding the discharging of any pollutants.

No items containing chlorinated fluorocarbons (CFC) should be knowingly accepted. Refrigerators, freezers, air conditioners, and any other items containing CFC must be handled in accordance with applicable regulations and with Section 4.23 of this manual, which requires verification that the CFC has been evacuated from the unit and that it was not knowingly allowed to escape into the atmosphere.

4.13 AIR CRITERIA

The landfill may be subject to applicable regulatory ministry rules concerning burning and air pollution control. The landfill manager should ensure that the landfill does not violate any applicable requirements of the air pollution regulations.

Open burning of waste should not be permitted at landfill facilities.

4.14 ODOR MANAGEMENT PLAN

Municipal solid waste landfill operations have the potential to yield odorous emissions. Odor management at a landfill is a combination of identifying the sources of odor and methods used to minimize or eliminate those odors. An odor management plan addresses the identification of potential sources of odors, and includes methods to minimize odors or sources of odors and procedures to be followed if identified methods are ineffective in preventing a release of odors to the surrounding community.

4.14.1 Sources of Odor

Sources of odor that emanate from a landfill can vary considerably and may include the wastes being delivered to the landfill, the open working face, or the leachate collection system. Many of the wastes received at a landfill are a source of odor upon receipt, such as sludge and dead animals. Other wastes have the potential for becoming a source of odor by their biodegradable characteristics, generating gases as they advance through the decomposition process. Leachate, the contaminated water that emerges from solid waste, may also be a source of odor if not properly handled or disposed of in a timely manner.

Ponded water containing contaminants, and composting, depending on the feedstock used in the operation, could become a source of odor as well.

4.14.2 Odor Minimization

The primary objectives for odor control at a landfill are to minimize odor generation and odor emissions. Methods used to achieve these objectives include waste and leachate handling procedures, the timely placement of cover materials, the elimination of ponded water, and gas control.

Waste Handling Procedures - Wastes are to be deposited at the working face, spread into layers that can be readily compacted, and covered with a minimum of six inches of soil or with an alternate daily cover material such as tarps or other applied materials. Sludges that pass the Paint Filter Test can be incorporated into the working face with other absorptive wastes. Dead animals should be covered immediately with one (1) meter of waste or 60 cm of soil.

Cover - The placement of daily cover is sufficient to reduce the immediate emission of odors when applied in sufficient thickness (minimum of 15 cm soil) and with the proper compaction or other approved cover. Daily cover also serves as the first deterrent to odor generation by preventing air and water from further impacting the wastes. If odors result during the use of alternate daily cover material, the alternate daily cover should be re-evaluated to determine if it should continue to be used. The placement of the intermediate and final cover should provide a barrier that should reduce the amount of odor emissions as decomposition of wastes occurs over time.

Leachate Handling Procedures - Leachate must be removed from the collection system at a rate to maintain less than 30 cm of head above the bottom liner. Leachate may be removed by pumping directly from the sump to a storage tank, evaporation pond, recirculation system, or a transfer truck. The evaporation pond may be a source for odors and should be monitored and equipped with aerators to further reduce the emission of odors by forcing oxygen into the leachate.

Figure 10: Leachate Evaporation Pond with Aerators

Ponded Water - Water ponded over waste disposal areas may become a source of odors and should be eliminated prior to the occurrence of odors. Ponded water that occurs in the active portion of the landfill or on a closed area should be eliminated as quickly as possible and the area in which the ponding occurred should be filled in and re-graded as soon as possible.

Gas Extraction System - Odor reduction may be achieved by the installation of a gas extraction system. The gas extraction system should minimize the migration of gases either horizontally or vertically. Gases collected in an extraction system may be distributed to such processing devices as a flare or processing plant.

4.14.3 Odor Response Procedures

Upon identification of landfill related-odors, landfill personnel should attempt to isolate the source of the odor. If an identifiable odor is detected at any of these areas, the landfill manager should be notified and initiate the necessary remedial actions. Remedial actions may include the application of additional cover over the suspect area, the use of odor controlling sprays applied directly to the working face, control of any ponded water on the landfill, adjustments to the gas extraction system, sealing the riser pipe covers of the leachate collection system, or other methods. If odors persist, the Landfill Manager may contract with

an engineer or other expert to address specific remediation issues.

4.15 DISEASE VECTOR CONTROL

Conditions favorable to the production or harboring of disease vectors (rodents, flies, and mosquitoes) should be minimized through proper compaction of the waste and the use of daily and intermediate cover, as appropriate. Vectors are attracted by wastes and water that serve as food and breeding grounds. The working face of each disposal area should be minimized and daily cover should be applied to control disease vectors. Landfill cover procedures are described in Section 4.21 of this manual. To further control disease vectors, ponded water should be controlled as detailed in Section 4.22 of this manual. Birds should also be controlled by use of the daily cover, minimizing the working face, and control of ponded water. Landfill personnel should look for insects and rodents and report problems to the landfill manager. Professional exterminators should be contacted, if necessary, to eliminate rodents or other pests that may appear at the landfill. If chemicals are needed for disease vector control, a professional should apply the appropriate chemical at the industry recommended rate, and use the appropriate health and safety practices to minimize any potential adverse effects.

4.16 LANDFILL ACCESS ROADS

All-weather landfill access roads provided from the public road to the unloading areas should consist of compacted gravel, crushed stone, asphalt, concrete, or other road building material. The tracking of mud and debris onto public roadways from the landfill should be minimized.

Tracking of mud onto public roadways should be controlled by removing mud on landfill entrance and access roads. Vehicles leaving the landfill should traverse all-weather landfill access road and paved landfill entrance roads allowing for mud to be removed from the vehicle. Additionally, the landfill may install a wheel wash near the landfill entrance road. If a wheel wash is utilized, landfill traffic may be directed through the wheel wash if mud is being tracked past the scalehouse.

Mud on the landfill entrance and access roads should be removed to prevent tracking of mud onto public access roads. Mud on landfill access roads should be removed by grading the mud off of the road. Mud on the landfill entrance road may be removed by a spray of water from the landfill water truck, by scraping with a landfill bulldozer or maintainer, or with a rotary broom street sweeper. Mud should be removed from the public roadway, landfill entrance and access roads as necessary to control the tracking

of mud onto public roads and at least once per day on days when mud associated with landfill operation may be tracked onto public roadways.

Figure 11: Landfill Access Road

Litter and debris should be controlled. Litter and debris that are tracked onto public roadways should be removed at least once per day on days when the landfill is operating. Litter should be picked up in accordance with Section 4.11 of this manual. Litter along the landfill entrance and access road should be picked up in accordance with Section 4.8 of this manual. Debris should be picked up daily from all landfill roads and from landfill access roads for a distance of three (3) kilometers in each direction from the landfill entrance. Landfill laborers should load any debris into the landfill pickup. The debris should be taken to the working face and disposed of.

Dust from landfill and other access roads should be controlled on an as-needed basis to avoid becoming a nuisance to surrounding areas. A water source and the necessary equipment should be provided by the landfill operator for dust control.

The landfill water truck should be equipped and utilized for dust control. Sources of water for this process may be a municipal water supply, the ditches along the perimeters, water collected in storm water ponds, and/or outside sources. Landfill roads and ditches should be cleaned of litter and debris on a daily basis. Landfill and other access roadways should be maintained in a clean and safe condition. Access

roadways should be re-graded on a monthly basis by grading and placing additional road materials to minimize depressions, ruts, and potholes, and provide uninterrupted access to the unloading area(s).

Records should be kept in the facility Operating Record to demonstrate compliance.

4.17 STORMWATER MANAGEMENT

A stormwater management system should be designed, constructed and maintained to prevent flow onto the active portion of the landfill, to control the runoff from the landfill and provide effective erosional stability of the landfill. The stormwater systems should be designed for a standard local design storm event, such as the 25-year, 24-hour storm event.

The stormwater management system may include perimeter drainage channels, stormwater detention ponds, final cover drainage terraces and rundown channels, erosion protection, and other culverts and storm drains.

The landfill should be protected from flooding by either locating the landfill out of flood prone areas or the construction of levees. The levees should be designed to prevent the washout of solid waste from the landfill and should not significantly restrict the flow of adjacent floodways, streams or rivers.

Stormwater management system should be inspected after significant rainfall events for evidence of erosion and sediment. If there is evidence of erosion, the facility should be repaired to their design cross sections. Cohesive soils should be brought in, compacted and shaped to achieve the design channel cross section.

Sediment accumulation in channels and detention ponds will be removed to achieve the design cross section.

4.18 SALVAGING AND SCAVENGING

Salvaging is the controlled removal of waste materials for utilization, recycling or sale. Scavenging is the uncontrolled and unauthorized removal of materials at any point in the solid waste management system. No scavenging should be allowed at the facility. This rule should be strictly enforced through landfill access controls and monitoring by facility personnel. Salvaging or recycling of materials such as metals and white goods should only be allowed with specific authorization from the landfill manager and if the

activity is supervised by landfill personnel. However, salvaging should not be allowed to interfere with prompt sanitary disposal of solid waste or to create public health nuisances. Such items should be removed on an as needed basis to prevent creation of nuisance conditions, to preclude the discharge of any pollutants from the area, and to prevent an excessive accumulation of the material at the facility.

Special waste received at the landfill should not be salvaged. Pesticide, fungicide, rodenticide, and herbicide containers should not be salvaged.

4.19 LANDFILL GAS CONTROL

Landfill gas monitoring for the presence of methane gas at the landfill should be conducted on a regular basis. In particular, the landfill boundary should be monitored to identify whether there exists the possibility of off-site methane migration or perimeter methane concentrations exceeding the lower explosive limit (LEL). Additionally, on-landfill structures should be checked to confirm that methane concentrations do not exceed 25 percent of the LEL.

Monitoring for combustible gas concentrations should be performed quarterly within all enclosed landfill structures and around the perimeter of landfilled portions of the landfill. All required reports and other submittals should be included in the operating record of the facility. Permanent probes should be used to monitor the perimeter. Barhole probes may be used as a supplement.

In the event that methane levels that exceed allowable lower limits are detected within structures or at the property boundary, steps should be implemented to ensure the protection of human health. Documentation of the gas measurements and of the steps taken for human protection should be placed in the Landfill Operating Record. A remediation plan for any methane gas releases as described in the Landfill Gas Management Plan should be implemented.

4.20 OIL, GAS AND WATER WELLS

The landfill should be inspected for existing or abandoned oil and/or water wells within the landfill. The landfill manager should immediately make record of the location of any and all existing or abandoned oil or gas wells or other wells associated with mineral recovery or water wells situated within the landfill. The landfill operator should ensure and document that all abandoned water wells have been capped, plugged, and closed in accordance with all applicable rules and regulations of the environmental Ministry.

If any water or other type of well is to be plugged, it should be plugged in accordance with all applicable regulatory Ministry requirements, with a copy of the well plugging report recorded in the facility's files.

4.21 COMPACTION

The waste should be thoroughly compacted by landfill compaction equipment in layers approximately 60 cm in thickness. The compaction equipment should pass over the waste a sufficient number of times (i.e., minimum of 4 passes) to achieve thorough compaction.

Figure 12: Landfill Compactor Compacting Waste at the Working Face

When waste is used as ballast, the first 1.5 meters or the total thickness of ballast, whichever is less, placed on the liner system should be free of brush and large bulky items, which might damage the liner system or which cannot be compacted to the required density. When waste is used as ballast, a wheeled trash compactor having a minimum weight of 18,000 kg, or similar equipment, should be utilized to reach a compaction density of at least 600 kg/m^3.

4.22 LANDFILL COVER

4.22.1 Daily Cover

In order to prevent disease vectors, control windblown debris and odors, reduce the possibility of fire,

prevent scavenging, and improve the operation of the landfill, a minimum of 15 cm of "daily" cover (earthen material that has not been previously mixed with garbage, rubbish or other solid waste) should be placed and compacted over all exposed waste at the end of each working day or at least once every 24 hours.

To ensure that the daily cover is adequate (i.e., minimize vectors, contaminated stormwater runoff, odors, etc.), the following procedures should be followed:

- The daily cover should be sloped to drain.
- The daily cover should be compacted with a minimum of two passes with the dozer tracks to minimize infiltration of stormwater, graded to drain, and should not have any waste visibly protruding through it.
- The landfill manager should document where daily cover has been placed through visual inspections during placement that a minimum of 15 cm (compacted thickness) of daily cover has been placed over the working face area. The landfill manager should document on a daily basis the daily cover completion and placement area.
- After each rainfall event resulting in runoff, the landfill manager should inspect all daily cover areas for erosion, exposed waste or other damage, and repair as necessary. Runoff water that comes in contact with waste should be handled as contaminated water (leachate).
- Runoff from areas that have intact daily cover is not considered as having come in contact with the working face or leachate.
- The landfill manager should inspect for seeps from daily cover. All seepage water from waste below the daily cover should be controlled by placement of soil berms and diverted to the contaminated water (leachate) collection area.

4.22.2 Alternate Daily Cover

Alternative daily cover materials may include synthetic material tarpaulins, synthetic foam materials, petroleum contaminated soils, or water treatment plant sludge. Each of the proposed alternate daily cover materials should provide for the functions of soil daily cover.

Alternate daily cover should not be allowed when the landfill is closed for a period greater than 24 hours.

In the event of a waste fire, the actions described in Section 4.3 should be implemented. Alternate daily cover materials should not be used in the area of a waste fire until the fire has been completely controlled.

If alternate daily cover material is present when a waste fire begins, the alternate daily cover material should either be removed or smothered with soil.

Different alternate daily cover materials:

- Synthetic material tarps, both reusable and sacrificial,
- Commercial foam products,
- Petroleum contaminated soils, and
- Water treatment plant sludge.

Alternate daily cover tarps are constructed from a variety of synthetic materials such as high density woven polypropylene, high density polyethylene, and other synthetic materials. Tarps provide for adequate waste coverage so that problems with windblown waste, vectors or odors are not observed. The material is not flammable and, although it may not have the same fire retarding properties of soil, should provide adequate protection since the tarps provide uniform waste coverage. Using standard landfill equipment and site personnel, the tarp is typically placed over the waste and secured along the sides and ends with soil, rock or other heavy items at the end of each working day. The tarps are removed the next operating day using landfill equipment and site personnel. If sacrificial tarps are utilized, they should be subsequently covered with new waste on the next working day. If the active face has an irregular shape or is larger than can be covered with available tarps, soil cover must be applied to the active face perimeter to "square it" down to appropriate dimensions prior to applying the tarp. To minimize tears, the tarp should not be forcibly dragged across the active face. Tarps should overlap each other on the active face perimeter. Up slope tarps should lap over down slope tarps in a shingle fashion.

Several commercial foam alternate daily cover products are available in the commercial market. Both hardening and non-hardening foams are available. The alternate daily cover foam layers are effectively destroyed by the placement of additional wastes on the next operating day. Alternate daily cover foams are applied mechanically to the working face by different methods depending on the product. The exact thickness depends on the specific alternate daily cover foams' specification for use. The thickness used, however, should be such that the waste is completely covered, and fire, vectors, odors and windblown wastes are controlled. The alternate daily cover foams when applied completely to cover the working face deter insects and birds from landing on the working face and keep animals from burrowing into the waste. Alternate daily cover foams diminish a vector's ability to sense food among the wastes. Alternate daily cover foams form a barrier that minimizes the transfer of atmospheric oxygen to the working face limiting odors. Alternate daily cover foams readily adhere to the wastes when applied, containing them

and preventing blowing litter. Alternate daily cover foams are also manufactured to be fire resistant giving them fire control properties similar to soil cover.

Figure 13: Spray On Foam Alternate Daily Cover Machine

Alternate daily cover foam products are typically applied with equipment that either sprays or lays a foam layer of sufficient thickness to cover the wastes as the equipment traverses the working face. Operator care should be taken to ensure that foam is applied in a continuous layer that completely covers the working face. Alternate daily cover foams products should only be applied when winds are below 25 miles per hour or per manufacturer's recommendation, whichever is lower. If the alternate daily cover foam becomes windblown either during or after the application, the use of foam should be discontinued until the wind decreases sufficiently to again allow use of the product or different products should be sought with improved wind properties. Some alternate daily cover foams allow large amounts of surface water infiltration into the waste mass. Alternate daily cover foams that allow large amounts of surface water infiltration should not be utilized during wet weather.

Petroleum contaminated soils that are contaminated with petroleum hydrocarbons may be acceptable for disposal provided that the waste has been adequately characterized and meets the requirements of Section 4.23, Special Waste. These soils may also be considered for use as an alternative daily cover material. Petroleum contaminated soils should be placed on the working face in the same manner as daily soil cover. The contaminated soils should be placed on one lift with a minimum thickness of 15 cm and

compacted sufficiently to minimize rutting and erosion, prevent the blowing of waste materials, and prevent insect and rodent problems.

Water treatment plant sludge may be accepted for disposal provided that the waste has been tested in accordance with Methosd 9095 (Paint Filter Liquids Test) and is certified to contain no free liquids. Water treatment plant sludge may be used as alternative daily cover provided that the material meets the Paint Filter Liquids Test criteria and in not characteristic of a hazardous waste based on the results of laboratory testing using Toxicity Characteristic Leaching Procedure methods. Water treatment plant sludge should be placed on the working face in the same manner as daily soil cover. The contaminated soils should be placed on one lift with a minimum thickness of 15 cm and compacted sufficiently to minimize rutting and erosion, prevent the blowing of waste materials, and prevent insect and rodent problems.

Wastewater treatment plant sludge should not be used as alternate daily cover.

4.22.3 Intermediate Cover

All areas that have received waste but should be inactive for longer than 180 days should be provided with intermediate cover. This intermediate cover should include 15 cm of suitable earthen material that is capable of sustaining native plant growth and should be seeded or sodded following its application in order to reduce erosion. Mulch may be used in conjunction with the suitable earthen materials as a method of reducing erosion after seeding and as a means of providing soil enrichment. This intermediate cover should be not less than 30 cm of suitable earthen material. Areas of intermediate cover should be graded for proper drainage to help prevent ponding of water, and plant growth or other erosion control features should be maintained. Runoff from areas which have received intermediate cover should not be considered as having come into contact with the working face or leachate.

Figure 14: Applying Intermediate Cover over Daily Cover

Figure 15: Intermediate Cover

4.22.4 Final Cover

Final cover in waste areas should be placed as sections of the landfill reach their final waste fill elevations. Once final cover has been placed, it is the responsibility of the landfill manager to ensure that vegetation is established and maintained, and that erosion is minimized.

The final cover system including the erosion control structures (such as drainage swales and chutes) should be maintained during the active life and through post closure. During the active life of the landfill, the landfill manager should inspect the final cover system on a weekly basis. Erosion of final cover should be repaired promptly by restoring the cover material, grading, compacting, and seeding as necessary.

Figure 16: Landfill Final Cover Inspection

4.22.5 Erosion of Cover

Interim or final cover that has been seeded and has vegetation established should continue to be maintained. However, caution should be exercised not to damage the integrity of vegetation in these areas that should result in greater erosion through the destruction of vegetative cover to fix minor erosion riles. To address this concern, minor or incidental erosion riles should be monitored to ensure that they do not develop into areas of significant erosion. Erosion of intermediate or final cover of a magnitude that would be considered significant should consist of areas that may jeopardize the integrity of the intermediate or final cover. These areas should be repaired as weather permits by restoring the cover material, grading, compacting, and seeding. The date of detection of erosion and date of completion or repairs, including reasons for any delays, should be documented in the cover inspection record. The

landfill manager should inspect the intermediate and final cover at the landfill on a monthly basis and after a rain event in which runoff occurs. After erosion is repaired, seeding should be provided over repaired areas to provide additional vegetation.

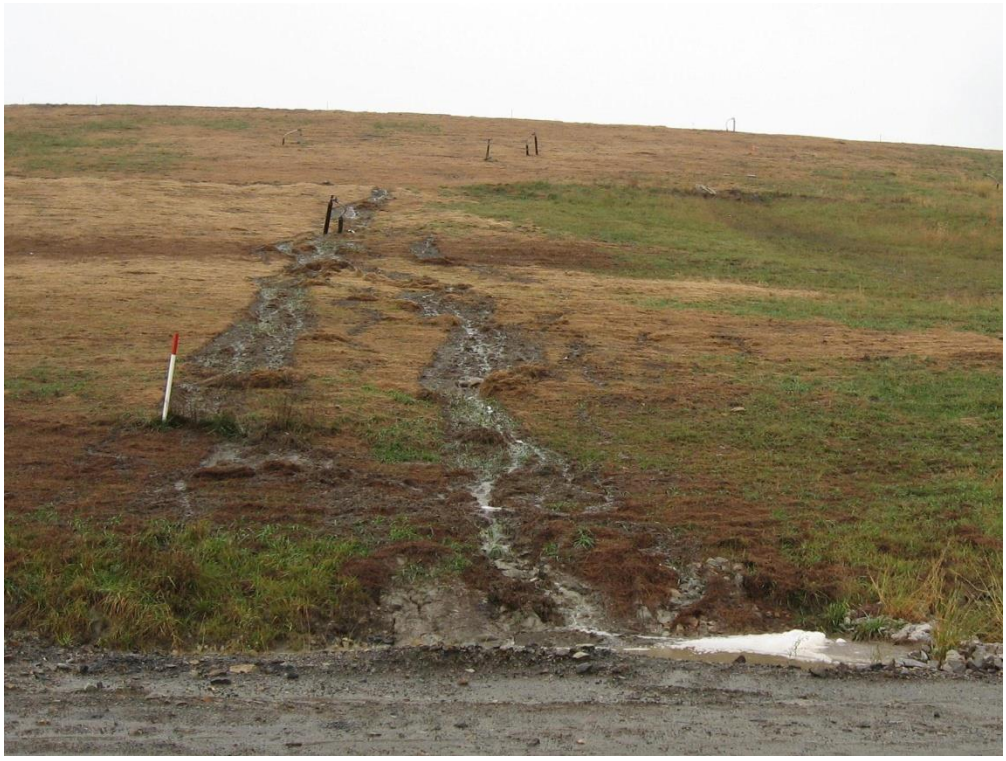


Figure 17: Landfill Cover Erosion

4.22.6 Cover Inspection Record

A cover application record should be maintained at the landfill and readily available for inspection. The record should specify the date that cover was accomplished, how it was accomplished, and the last area covered. This applies to daily, alternate daily, intermediate, and final cover. For final cover, the record should also specify the thickness applied on that date. Each entry should be certified by signature of the landfill manager or designated representative.

A cover inspection record should be maintained that documents inspections of daily, intermediate and final cover, the findings, and corrective action taken when necessary.

4.23 PONDED WATER

Measures should be implemented to prevent ponding of water over waste in the disposal areas. When ponded water does occur in the active portion of the landfill, it should be actively removed with portable

pumps. Ponded water from an area with at least 30 cm of intermediate cover should be pumped/removed to the landfill drainage system. Contaminated water found within active disposal areas should be handled as leachate and either: 1) discharged to an off-site wastewater treatment facility, 2) evaporated in leachate evaporation ponds, or 3) removed to an on-site treatment and discharge facility. Contaminated water may not be re-circulated into the landfill.

Figure 18: Ponded Water on Landfill Cover

Ponded water that occurs in the active portion of the facility or on a closed portion of the facility must be eliminated and the area in which the ponding occurred should be filled in and re-graded as soon as possible.

4.23.1 Ponding Prevention Plan

The potential for ponding of water over waste areas should be minimized by achieving a high density compaction during the placement of the wastes and by constructing and maintaining proper cover and slope on all areas so that stormwater should not pond and drain properly, either to the landfill drainage system (for intermediate or final covered areas) or to run-off control structures (for active disposal areas). Measures should be implemented to minimize ponding of water over waste in the disposal areas, such as the installation of upgradient diversion berms to minimize the amount of water entering the disposal area, and proper construction of the working face slopes.

Active portions of the landfill; including final covered areas not in post closure care, intermediate cover areas, and daily cover areas, should be inspected at least monthly for signs of ponded water or depressions that could potentially pond water. Additional inspections may be conducted after rainfall events in excess of 5 cm or more rain in a 24 hour period. These inspections should be conducted within a day of the rainfall event. However, during periods of extended or heavy rainfall, portions of the landfill may not be accessible to vehicles for inspection. During these periods it may be necessary to allow for drying prior to accessing the remote sections of the landfill for inspection.

During the post closure period of closed portions of the landfill, the final cover should be inspected and maintained annually, at a minimum.

Depressions that could potentially pond water should be eliminated by filling and/or re-grading as soon as possible, weather and access permitting.

Ponded water should be eliminated as soon as possible, weather and access permitting.

Ponded water areas may be corrected by implementing one or more of the following procedures:

- Pumping water out of the depression,
- Re-grading and allowing the water to flow off, and
- Adding cover soils to fill the depression and forcing the water on to areas of the landfill that allows the water to flow off the landfill.

However, during periods of extended or heavy rainfall, the landfill may not be able to operate on the cover materials without further compromising the cover with the tracking of equipment. During these periods, the landfill may allow for a day of drying prior to accessing the ponded water location with equipment.

After the ponded water has been removed the landfill should be re-graded and/or filled with additional cover soil to eliminate the potential for ponded water and promote positive drainage.

Water that has been in contact with waste, daily cover, and/or alternate daily cover should be removed and handled as contaminated water (leachate).

Records should be kept in the facility Operating Record to demonstrate compliance.

4.24 DISPOSAL OF SPECIAL WASTE

Special waste is any solid waste or combination of solid wastes that because of its quantity, concentration, physical or chemical characteristics, or biological properties requires special handling and disposal to protect human health or the environment. The various types of special wastes are defined in Appendix A, Glossary.

The following special wastes can be accepted for disposal at the landfill operator's discretion:

- Special wastes from health care related facilities that have been treated with steam disinfection, moist heat disinfection, chemical disinfection, chlorine disinfection/maceration, thermal inactivation, incineration, or other approved alternate treatment.
- Dead animals and/or slaughterhouse waste provided the carcasses and/or slaughterhouse waste are covered by 1 meter of other solid waste or at least 60 cm of earthen material immediately upon receipt.
- Asbestos-containing materials provided the wastes are placed on the active working face and covered in accordance with applicable regulations. Under no circumstances should any material containing non-regulated asbestos-containing materials be placed on any surface or roadway which is subject to vehicular traffic or disposed of by any other means by which the material could be crumbled into a friable state.
- Empty containers that have been used for pesticides, herbicides, fungicides, or rodenticides should be disposed of in accordance with subparagraphs (a) and (b) of this paragraph.
  - (a) These containers may be disposed of at the disposal facility provided that:
    - (i) containers are triple-rinsed prior to receipt at the landfill;
    - (ii) containers are rendered unusable prior to or upon receipt at the landfill; and
    - (iii) containers are covered by the end of the same working day they are received.
  - (b) Those containers for which triple-rinsing is not feasible or practical (e.g. paper bags, cardboard containers) may be disposed of under the provisions of paragraph (6) of this Section 4.24.
- Sludge, grease trap waste, or grit trap waste from municipal sources if the material has been treated or processed and the treated/processed material has been tested, in accordance with Test Method 9095 (Paint Filter Liquids Test), http://www.epa.gov/epawaste/hazard/testmethods/sw846/pdfs/9095b.pdf and is certified to contain no free liquids.
- Soil contaminated by petroleum products, crude oils, or chemicals (also referred to as petroleum

contaminated soils) may be accepted for disposal only if they are tested as being under the limits specified in the following table.

Table 8: Special Waste Contaminated Soil Testing Requirements

CONTAMINANT	CONSTITUENTS OF CONCERN	MAXIMUM CONTAMINANT LEVEL MUST BE LESS THAN
Automotive Gasoline	Benzene Total Petroleum Hydrocarbon Lead[2]	0.5 mg/l[1] 1500 mg/kg 1.5 mg/l[1]
All Other Fuels (i.e., Diesel, Kerosene, Aviation, Fuel Oil, etc.)	Benzene Total Petroleum Hydrocarbon Lead[2]	0.5 mg/l[1] 1500 mg/kg 1.5 mg/l[1]
Used Motor Oil from an Internal Combustion Engine	Benzene Total Petroleum Hydrocarbon Lead[2]	0.5 mg/l[1] 1500 mg/kg 1.5 mg/l[1]
All Other Petroleum Hydrocarbons	Total Petroleum Hydrocarbon Polychlorinated Biphenyls[3]	1500 mg/kg 50 mg/kg

[1] *An analysis of total contaminant level may be used as a screening tool prior to Toxicity Characteristic Leaching Procedure (TCLP). To determine the maximum total contaminant level at which a TCLP is not necessary multiply the table limit by a factor of twenty. This formula is extrapolated from a twenty to one dilution factor when preparing TCLP samples for analysis (Title 40 Code of Federal Regulations, Part 261 http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr261_main_02.tpl). If a contaminant total level exceeds twenty times the table limit (e.g. total lead >30 mg/kg, total benzene >10 mg/kg, etc), then TCLP must be performed. Please note that this extrapolation is applicable only to solids.*

[2] *If it is known, through process knowledge, that the Automotive Gasoline and fuels did not contain lead, it is not necessary to test for lead.*

[3] *If it is known, through process knowledge, that All Other Petroleum Hydrocarbons did not contain PCB, it is not necessary to test for PCB.*

To determine whether or not a soil meets the criteria listed in the table, one composite sample should be taken for every 40 cubic meters of contaminated soil. The composite sample should be comprised of 4 separate grab samples from within the 40 cubic meters. The person taking the sample should strive to obtain the most representative sample possible. All samples must be analyzed for total petroleum hydrocarbon. When additional parameters are required (benzene, lead, or PCB) it is only necessary to analyze the sample that is determined to contain the highest level of total petroleum hydrocarbon from each of 150 cubic meters. For example, if there are 300 cubic meters of contaminated soil, there should be eight samples tested for total petroleum hydrocarbon and the two samples with the highest total petroleum hydrocarbon level from those samples should be analyzed for the additional parameters of

concern. Laboratory detection limits must be less than or equal to the maximum contaminant levels listed in the preceding table for the analysis to be considered valid.

Other soils contaminated by petroleum products, crude oils, or chemicals (not addressed in the table) require specific authorization on a case-by-case basis prior to disposal. Requests for authorization to dispose of contaminated soils should be accompanied by analytical data (including signed laboratory reports, chain-of-custody information, Quality Control Data, and a sampling plan).

Prior to receiving the above types of waste, the customer/generator should provide sufficient documentation that their wastes meet all of the requirements listed above. This type of documentation, when necessary, should include information such as the generator's information, description of the waste, description of the process generating the waste, volume of waste, waste/chemical composition, physical characteristics, and any other information the landfill manager deems necessary. This documentation may be included on a waste profile form such as the one included in Appendix B of this manual. Analytical data used for documentation should not be more than one year old.

Authorized personnel responsible for reviewing special waste documentation should be familiar with the application of relevant regulations and guidance documents pertaining to waste classification, waste characterization, and hazardous waste determination. An example of regulations and guidance documents include: 40 CFR Part 261 - Identification and Listing of Hazardous Waste http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr261_main_02.tpl.

4.24.1 Regulated Asbestos Containing Material Handling Plan

Breathing asbestos fibers into the lungs has the potential to cause disabling lung diseases and cancer. The primary health objective in handling asbestos waste is the prevention of the release of asbestos fibers during demolition, renovation, transportation, and disposal operations. Proper management practices can prevent exposure to asbestos fibers, eliminating the potential for serious health consequences.

The landfill manager should be notified by the transporter at least 24 hours in advance of the delivery. Less than 24 hour notice is acceptable provided the landfill manager determines that the load can be properly handled and covered.

1. Notification and Record Keeping

a. When a load of regulated asbestos containing material arrives at the gate house, the gate attendant should notify the landfill manager, or his designated representative, who should oversee the disposal operations.
b. The gate attendant should check the accompanying manifest to ensure that all necessary information is properly recorded.
c. If the manifest is properly completed, the facility operator or his designated representative should sign the manifest.
d. the gate attendant should direct the driver to the proper disposal location, and record the receipt in an Asbestos Receipt Log.

2. Initial Inspection
    a. When the load of regulated asbestos containing material arrives at the disposal area, prior to unloading, the regulated asbestos containing material should be visually inspected by landfill personnel to determine if the waste has been properly wetted and bagged. A load of regulated asbestos containing material determined to be improperly wetted or bagged should be rejected for disposal. In an effort to minimize the potential hazard posed to the public that sending an improperly wetted and bagged load back into public roadways presents, the rejected load should be held in a discreet area on-site. The generator must then make arrangements to have the waste properly bagged within 24 hours. After that time, the landfill should make arrangements to have the load re-wetted and bagged at the sole expense of the generator.
    b. During this initial inspection, all personnel in the immediate area should wear protective clothing and respirators. A water source should be on standby in the immediate area in case of a spill during the initial inspection, and should remain in the immediate area until the regulated asbestos containing material is covered.
3. Place of Unloading
    a. The entire fillable landfill area may be considered as a potential regulated asbestos containing material disposal area.
    b. Regulated asbestos containing material is to be placed in a disposal area separate from (but possibly adjacent to) the active working face. A separate landfill cell is not required. A hole with a depth of approximately 1 to 2 meters and of sufficient length and width to take the volume of the incoming regulated asbestos containing material waste should be made with a dozer or other earth moving equipment prior to unloading.
    c. Below natural grad fill areas for placement of regulated asbestos containing material is preferred. A minimum separation of 1 meter of other solid waste is required between the bottom and sidewall liner and regulated asbestos containing material. However, should

this below natural grade disposal not be possible or practical, the following precautions should be taken for above natural grade fill areas to ensure the waste is not subject to future exposure through erosion or weathering of the immediate and/or final cover. Regulated asbestos containing material disposal in above natural grade fill areas should be at least 7 meters interior of any design finished side slope of the landfill. In addition, regulated asbestos containing material disposal should be at least 3 meters below the design finished top final surface elevations of the landfill.

4. Methods of Unloading

Transporters should use the method as described below to unload regulated asbestos containing material at the landfill.

a. Bags or containers holding regulated asbestos containing material must be carefully unloaded and placed in their disposal location rather than thrown to the ground. Unloading should be conducted by employees of the generator or transporter. All personnel involved in the unloading operation must wear respirators and protective clothing.

b. Unloading of roll-off containers is permitted when performed in accordance with the following procedures:

i. Line the bottom and sides of all roll-off containers with a sheet of 6-mil plastic (or equivalent) prior to placement on the wetted and double bagged regulated asbestos containing material. An important part of the procedure is the prior inspection of the roll-off boxes. The bottoms and sides must be free from rough or sharp protrusions that would tear the plastic sheet or bags or limit their ability to slide out.

ii. The bags of regulated asbestos containing material are hand placed in the lined roll-off box.

iii. A sheet of 6 mil plastic (or equivalent) is placed over the top of the waste bags in open roll-offs and secured to the plastic lining the box, effectively developing a plastic envelope over the doors of the waste unit.

iv. The truck and roll-off box are positioned to unload at the hole excavated in advance for disposal of the waste. A water truck should be available during the process of discharging the waste into the excavated area to reduce the chances of the asbestos becoming airborne in the event of a rupture.

v. With the opened roll-off box tailgate above the edge of the excavation, the bed of the truck and the roll-off box are gradually elevated until the entire envelope slowly slides out of the roll-off box and into the excavation. Bags and plastic

sheeting that do not land in the excavation should be hand-placed, by the transporter personnel wearing respirators and protective equipment, rather than being pushed into place by equipment.

5. Covering the Asbestos Waste
    a. Asbestos waste should not be compacted directly. Immediately after unloading, the asbestos waste should be covered with a minimum of 1 meter of other solid waste or 30 cm of soil. Care should be exercised in the application of the cover to ensure that the bags or containers are not ruptured.
6. Grid System Control
    a. A 3-dimensional grid system should be utilized to identify where the waste is disposed. The site grid system and a temporary elevation benchmark should be carried over the active asbestos disposal area by surveyors or a global positioning system adjusted to correlate to the site grid system and benchmark and should be used in identifying the disposal locations in a log book. The date of disposal, the approximate elevation and grid coordinates, and the volume of waste should be recorded in the log book.
7. Record Keeping
    a. Record keeping for regulated asbestos containing material disposal includes manifests, waste shipment records, and a regulated asbestos containing material log book.
        i. The regulated asbestos containing material log book should contain:
            1. Name of the generator,
            2. Manifest number,
            3. Date of receipt,
            4. Volume of regulated asbestos containing material, and
            5. Transporter name.
        ii. The 3-dimensional regulated asbestos containing material disposal should be maintained in a separate log book with the following information:
            1. The horizontal location of disposal.
            2. The elevation of disposal.
            3. The volume of waste.
            4. The date of disposal.
8. Personal Protective Equipment
    a. Respirators and protective clothing prevents exposure and spread of asbestos contamination. The respirator and disposable coveralls should be worn by all personnel in immediate proximity to the disposal of regulated asbestos containing material. Should a spill occur during the disposal operation, workers involved in the cleanup shouls wear

their respirator, disposable coveralls, gloves, and foot coverings. Requirements for respirators and protective clothing are as follows:

i. Respirators
    1. Must be National Institute for Occupational Safety and Health http://www.cdc.gov/niosh/ approved.
    2. Must be fit tested to each individual.
    3. Must be clean and properly maintained.

ii. Personal Protective Equipment
    1. Disposable coveralls.
    http://www2.dupont.com/DuPont_Personal_Protection/es_MX/index.html.
    2. Gloves (when required).
    3. Foot coverings (when required).

9. All employees involved in the receipt and disposal of regulated asbestos containing material are given training annually on the proper procedures of managing regulated asbestos containing material. All employee training should be completely documented and maintained on-site. This training includes:
    a. Asbestos and its health effects.
    b. Regulations on transportation, disposal and worker protection.
    c. Paperwork, manifesting and notification requirements.
    d. Personal protection and protective equipment (including respirator fit tests).
    e. Transportation requirements.
    f. Regulated asbestos containing material receipt procedures.
    g. Regulated asbestos containing material disposal procedures.
    h. Location logging and record keeping.
    i. Spill response actions.

    Contractors and others working around the regulated asbestos containing material disposal areas are informed of the regulated asbestos containing material disposal practices at the site. Should any excavation work be necessary in areas of previous regulated asbestos containing material disposal, the disposal location should be identified and all personnel working in that vicinity should wear the appropriate protective clothing. Any excavated or exposed regulated asbestos containing material should be handled in the same manner as if the waste had just been brought in for disposal.

10. Contingency Plan

    The following procedures should be followed in the event of a spill of regulated asbestos containing material at or near the landfill.

a. Personal Protection
    i. Get upwind of the regulated asbestos containing material.
    ii. Employees involved in cleanup should make use of their spill control kits, including:
        1. Respirator.
        2. Disposable coveralls.
        3. Shoe covers.
        4. Gloves.
        5. Safety glasses or goggles.
    iii. Keep others away until cleanup is complete.
b. Notification
    i. Notify the landfill manager.
c. Emergency Cleanup Actions
    i. Summon water truck, wet down waste with a misting spray of water.
    ii. Scoop the waste and put it into a properly labeled bag or a closed container and dispose of it with the other regulated asbestos containing material.
    iii. Wash any contaminated equipment or machinery.
    iv. Dispose of gloves, coveralls, and shoe covers in a tightly sealed 6 mil plastic bag.
    v. Wash al other personal protective equipment with soap and water.
    vi. Check respirator, refit with new filter cartridges, and place into a resealable, air tight container for future use.
d. Spill Response Equipment
    i. A NIOSH approved respirator with the proper pre-filters.
    ii. A disposable coverall suit.
    iii. Disposable gloves.
    iv. Rubber boots or shoe covers.
    v. 6 mil plastic bags with asbestos warning.
    vi. Waster spray truck.
    vii. Roll of duct tape.
    viii. Broom and shovel.

4.25 DISPOSAL OF INDUSTRIAL WASTE

Industrial nonhazardous waste is defined as solid waste resulting from or incidental to any process of industry or manufacturing, or mining or agricultural operations.

Landfills may accept nonhazardous industrial solid waste for disposal provided the acceptance of this waste does not interfere with landfill operations. These types of waste should be treated as typical municipal solid waste.

4.26 LEACHATE SYSTEM MAINTENANCE

It is the responsibility of the landfill manager to ensure that the leachate collection system remains in good working order. As leachate systems are installed for new cell constructions, landfill personnel should be trained on the operation and maintenance procedures associated with the equipment. The leachate system at each cell location should be monitored to ensure continuous operations for regulatory compliance. Any system found to not be operating properly should be brought to the immediate attention of the landfill manager. The landfill manager, should ensure that appropriate measures are taken to repair the system as soon as possible.

Figure 19: Leachate Storage Tanks

4.27 LEACHATE AND GAS CONDENSATE RECIRCULATION

The landfill leachate or gas condensate derived from a landfill unit may be re-circulated into the landfill unit at the same facility from which the leachate or gas condensate was derived. Leachate or gas condensate can only be re-circulated in landfill units that are designed and constructed with a leachate

collection system and a composite liner. Storm water and any other water that collects in or runs off from the working face and/or areas with only daily cover or alternative daily cover material must be managed as contaminated water (leachate).

The recirculation should be accomplished in a manner that prevents ponding or significant accumulations of leachate in any one area. Contaminated water and groundwater should not be recirculated.

Figure 20: Spray Application of Leachate Recirculation over Daily Cover

The leachate and gas condensate do not need to be characterized for recirculation into a landfill.

The landfill may also dispose of leachate or gas condensate in leachate evaporation ponds, on landfill water treatment facilities or off-site water treatment. The landfill should not discharge contaminated water without specific written authorization from the appropriate Ministry.

4.28 CRITICAL INSPECTION POINTS

Table 9: General Landfill Operating Critical Inspection Points

ITEM NO.	DESCRIPTION	WHEN	FREQUENCY
4	**General Landfill Operating**		
4.1	Personnel Training		
4.1.1	Initial Employee Training Records	At Initial Hiring	Once Per Employee
4.1.2	Annual Employee Training Records	Annually	At Least Once Per Year
4.2	Control of Prohibited Waste		
4.2.1	Prohibited Waste Sign	Initial Landfill Construction	Continually While Operating
4.2.2	Random Inspections	Weekly	5 Times Per Week
4.2.3	Personnel Training in Prohibited Waste	Annually	At Least Once Per Year
4.2.4	Remediation of Prohibited Waste	Per Occurrence	Per Occurrence
4.2.5	Liquids Restriction	Continually While Operating	Continually While Operating
4.3	Fire Protection Plan		
4.3.1	Personnel Training in Fire Protection	Annually	At Least Once Per Year
4.3.2	Fire Extinguishers	Continually While Operating	Inspect Annually
4.3.3	No Burning of Solid Waste	Continually While Operating	Continually While Operating
4.3.4	No Smoking at Active Areas of Landfill	Continually While Operating	Continually While Operating
4.3.5	Soil Stockpile Sufficient to Cover Working Face	Continually While Operating	Continually While Operating
4.4	Access Control		
4.4.1	Fence or Other Barrier	Continually While Operating	Continually While Operating
4.4.2	Lockable Gate	Continually While Operating	Continually While Operating
4.4.3	Inspection Records	Monthly	Monthly
4.5	Unloading of Waste		
4.5.1	Municipal Solid Waste Working Face 100 meters x 50 meters maximum size	Continually While Operating	Continually While Operating
4.5.2	Brush, Wood Active Area	Optional	Optional
4.5.3	Liquid Waste Processing Area	Optional	Optional
4.5.4	Asbestos Disposal Records	Per Event	Continually While Operating
4.5.5	Construction and Demolition Waste Area	Optional	Optional
4.5.6	Tire Storage and Processing Area	Optional	Optional
4.5.7	Brush, Wood, Tire, Construction and Demolition Waste, and Recycling Active Areas free of Putrescible Material	Optional	Continually While Operating
4.6	Hours of Operation	As Required	As Required

ITEM NO.	DESCRIPTION	WHEN	FREQUENCY
4.6.1	Days and Hours of Operation Posted at Landfill Entrance	Initial Landfill Construction	Continually While Operating
4.7	Landfill Sign		
4.7.1	Sign Minimum Size 1 Meter x 1 Meter	Initial Landfill Construction	Continually While Operating
4.7.2	Letters Minimum Size 7 cm	Initial Landfill Construction	Continually While Operating
4.7.3	Name of Landfill, Solid Waste Landfill, Hours and Days of Operation, 24 Hour Emergency Contact Telephone Number	Initial Landfill Construction	Continually While Operating
4.8	Control of Windblown Solid Waste and Litter		
4.8.1	Windblown Litter at Landfill Collected and Returned to Working Face	Daily	Once Per Day
4.8.2	Litter Fences at Working Face	At Discretion of Landfill Manager	As Needed
4.9	Easements		
4.9.1	No Waste Unloading, Storage, Disposal, or Processing Within Any Easement	Continually While Operating	Continually While Operating
4.9.2	No Waste Unloading, Storage, Disposal, or Processing Within 7 Meters of the Centerline of Any Easement	Continually While Operating	Continually While Operating
4.10	Landfill Markers and Benchmarks		
4.10.1	Black Landfill Boundary Markers	Initial Landfill Construction	Continually While Operating
4.10.2	Green Easement Markers	Initial Landfill Construction	Continually While Operating
4.10.3	White Site Grid Markers	Initial Landfill Construction	Area to Be Filled For Next Year
4.10.4	Red Constructed Landfill Liner Markers	At the Completion of Each Landfill Liner Segment Construction	With Each Liner Construction
4.10.5	Site Benchmark	Initial Landfill Construction	Continually While Operating
4.11	Materials Along Route to Landfill		
4.11.1	Sign at Entrance Requiring Loads to be Covered or Enclosed	Initial Landfill Construction	Continually While Operating
4.11.2	Inspect Roadways used to Access Landfill within 3 Kilometers and Pick Up all Litter and Trash	Daily	Daily
4.12	Disposal of Large Items		
4.12.1	Large Items Receive Special Handling	Continually While Operating	Continually While Operating
4.12.2	No Items with Chlorinated Fluorocarbons Accepted for Disposal	Continually While Operating	Continually While Operating
4.13	Air Criteria		
4.13.1	Obtain Any Required Air Permits	Continually While Operating	Continually While Operating
4.14	Odor Management Plan		
4.14.1	Odors Controlled to Prevent Off Site Migration	Continually While	Continually While

ITEM NO.	DESCRIPTION	WHEN	FREQUENCY
		Operating	Operating
4.14.2	Dead Animals Covered with 1 Meter Waste or 60 Centimeters of Soil	Per Occurrence	Per Occurrence
4.14.3	Ponded Water Controlled	Continually While Operating	Continually While Operating
4.14.4	Daily or Alternate Daily Cover	Daily	Daily
4.15	Disease Vector Control		
4.15.1	Vectors (flies, rodents, mosquitoes) Minimized	Continually While Operating	Continually While Operating
4.15.2	Ponded Water Controlled	Continually While Operating	Continually While Operating
4.15.3	Birds Minimized	Continually While Operating	Continually While Operating
4.16	Landfill Access Roads		
4.16.1	Landfill Access Roads Provided from Public Road to Unloading Areas	Initial Landfill Construction	Continually While Operating
4.16.2	Mud Tracking onto Public Roads Minimized	Continually While Operating	Continually While Operating
4.16.3	Mud Cleaned from Public Roads	Mud Tracked Onto Public Access Roads	Daily
4.16.4	On-Site Access Roads Controlled for Dust	Continually While Operating	Continually While Operating
4.16.5	On-Site Access Roads Cleaned of Litter and Debris	Daily	Daily
4.17	Stormwater Management		
4.17.1	Stormwater Facilities Designed and Constructed	Continually While Operating	Continually While Operating
4.17.2	Erosion of Stormwater Facilities	After Significant Rainfall Events	Continually While Operating
4.17.3	Sediment Accumulation in Stormwater Facilities	After Significant Rainfall Events	Continually While Operating
4.18	Salvaging and Scavenging		
4.18.1	Scavenging Not Allowed	Continually While Operating	Continually While Operating
4.18.2	Salvaging or Recycling of Materials Allowed as Directed by the Landfill Manager	As Allowed By Landfill Manager	As Directed
4.18.3	Salvaging Does Not Interfere With the Prompt Sanitary Disposal of Waste or Create Public Health Nuisances	Continually While Operating	Continually While Operating
4.18.4	Special Wastes Are Not Salvaged	Continually While Operating	Continually While Operating
4.19	Landfill Gas Control		
4.19.1	Landfill Boundary Monitored for Lower Explosive Limit	Quarterly	Quarterly
4.19.2	Landfill On-Site Buildings Monitored for 25 Percent Lower Explosive Limit	Quarterly	Quarterly
4.19.3	Permanent Landfill Gas Probes Installed Along Landfill Boundary	Initial Landfill Construction	Expanded as Landfill Expands
4.19.4	Landfill Gas Remediation	Per Occurrence	Per Occurrence

ITEM NO.	DESCRIPTION	WHEN	FREQUENCY
4.20	Oil, Gas and Water Wells		
4.20.1	Oil, Gas and Water Wells that are Not Active or In Use are Plugged and Abandoned	Per Occurrence	Per Occurrence
4.21	Compaction	Monthly	Monthly
4.21.1	Waste Compacted in Maximum 60 Centimeter Layers	Continually While Operating	Continually While Operating
4.21.2	Waste Compacted with At Least 4 Passes of Landfill Compactor	Continually While Operating	Continually While Operating
4.22	Landfill Cover		
4.22.1	15 Centimeters of Daily Cover Applied	Once a Day When Operating	Daily
4.22.2	Alternate Daily Cover Applied	When Applied	Daily
4.22.3	30 Centimeters of Intermediate Cover	When Applied	Daily, When Applied
4.22.4	Final Cover Construction	Area Reaches Final Waste Grades	Daily, When Applied
4.22.5	Cover Log (Daily, Alternate Daily, Intermediate and Final Cover)	Once a Day When Operating	Daily
4.22.6	Erosion of Intermediate and Final Cover Repaired	When Erosion is Found	Monthly
4.23	Ponded Water		
4.23.1	Areas of Ponded Water Repaired to Remove Ponding Conditions	When Ponding Conditions are Found	Monthly
4.23.2	Ponded Water is Removed	When Ponded Water is Found	Monthly
4.24	Disposal of Special Waste		
4.24.1	Special Waste Information Including: Generator's Information, Description of Waste, Description of Process, Volume, Waste/Chemical Composition, and Physical Characteristics	Per Each Waste Stream	Annually
4.25	Disposal of Industrial Waste		
4.25.1	Landfill Manager's Acceptance of Industrial Waste	Per Each Waste Stream	At Landfill Manager's Discretion
4.26	Leachate System Maintenance		
4.26.1	Leachate System Operational	As Required	Monthly or As Required
4.27	Leachate and Gas Condensate Recirculation		
4.27.1	Leachate Recirculated	Per Occurrence	Per Occurrence
4.27.2	Gas Condensate Recirculated	Per Occurrence	Per Occurrence

APPENDICES

APPENDIX A

Glossary

ACTIVE DISPOSAL AREA - All landfill working faces and areas covered with daily and alternative daily cover.

ACTIVE LIFE - The period of operation beginning with the initial receipt of solid waste and ending at certification/completion of closure.

ACTIVE PORTION - That part of a landfill that has received or is receiving wastes and that has not been closed.

ASBESTOS-CONTAINING MATERIALS - Include the following.

(A) Category I nonfriable asbestos-containing material means asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1.0% asbestos as determined using the method specified in Appendix A, Subpart F, 40 Code of Federal Regulations (CFR) Part 763, §1, Polarized Light Microscopy.

(B) Category II nonfriable asbestos-containing material means any material, excluding Category I nonfriable asbestos-containing material, containing more than 1.0% asbestos as determined using the methods specified in Appendix A, Subpart F, 40 CFR Part 763, §1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

(C) Friable asbestos-containing material means any material containing more than 1.0% asbestos that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

(D) Nonfriable asbestos-containing material means any material containing more than 1.0% asbestos that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

ASTM - American Society for Testing and Materials.

BIRD HAZARD - An increase in the likelihood of bird/aircraft collisions that may cause damage to an aircraft or injury to its occupants.

BRUSH - Cuttings or trimmings from trees, shrubs, or lawns and similar materials.

BUFFER ZONE - A zone free of municipal solid waste processing and disposal activities within and adjacent to the facility boundary on property owned or controlled by the owner or operator.

COLLECTION - The act of removing solid waste (or materials that have been separated for the purpose of recycling) for transport elsewhere.

COLLECTION SYSTEM - The total process of collecting and transporting solid waste. It includes storage containers; collection crews, vehicles, equipment, and management; and operating procedures. Systems are

COMMERCIAL SOLID WASTE - All types of solid waste generated by stores, offices, restaurants, warehouses, and other nonmanufacturing activities, excluding residential and industrial wastes.

COMPACTED WASTE - Waste that has been reduced in volume by a collection vehicle or other means including, but not limited to, dewatering, composting, incineration, and similar processes, with the exception of waste that has been reduced in volume by a small, in-house compactor device owned and/or operated by the generator of the waste.

COMPOSITE LINER - A liner system consisting of two components: the upper component must consist of a minimum 30-mil geomembrane liner or minimum 60-mil high-density polyethylene, and the lower component must consist of at least a 60 cm layer of re-compacted soil deposited in lifts with a hydraulic conductivity of no more than 1×10^{-7} centimeters/second. The geomembrane liner component must be installed in direct and uniform contact with the compacted soil component.

COMPOST - The stabilized product of the decomposition process that is used or sold for use as a soil amendment, artificial top soil, growing medium amendment, or other similar uses.

COMPOSTING - The controlled biological decomposition of organic materials through microbial activity.

CONSTRUCTION OR DEMOLITION WASTE - Waste resulting from construction or demolition projects; includes all materials that are directly or indirectly the by-products of construction work or that result from demolition of buildings and other structures, including, but not limited to, paper, cartons, gypsum board, wood, excelsior, rubber, and plastics.

CONTAINER - Any portable device in which a material is stored, transported, or processed.

CONTAMINATE - To alter the chemical, physical, biological, or radiological integrity of ground or surface water by man-made or man-induced means.

CONTAMINATED WATER - Leachate, gas condensate, or water that has come into contact with waste.

DISCHARGE - Includes deposit, conduct, drain, emit, throw, run, allow to seep, or otherwise release, or to allow, permit, or suffer any of these acts or omissions.

DISPOSAL - The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste (whether containerized or uncontainerized) into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwater.

FACILITY - All contiguous land and structures, other appurtenances, and improvements on the land used for the storage, processing, or disposal of solid waste.

FILL MATERIAL - Any material used for the primary purpose of filling an excavation.

FLOODPLAIN - The lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, that are inundated by the 100-year flood.

GARBAGE - Solid waste consisting of putrescible animal and vegetable waste materials resulting from the handling, preparation, cooking, and consumption of food, including waste materials from markets, storage facilities, handling, and sale of produce and other food products.

GAS CONDENSATE - The liquid generated as a result of any gas recovery process at a municipal solid waste facility.

GENERATOR - Any person, by site or location, that produces solid waste to be shipped to any other person, or whose act or process produces a solid waste or first causes it to become regulated.

GREASE TRAP WASTE - Material collected in and from a grease interceptor in the sanitary sewer service line of a commercial, institutional, or industrial food service or processing establishment, including the solids resulting from dewatering processes.

GRIT TRAP WASTE - Grit trap waste includes waste from interceptors placed in the drains prior to entering the sewer system at maintenance and repair shops, automobile service stations, car washes, laundries, and other similar establishments.

GROUNDWATER - Water below the land surface in a zone of saturation.

HOUSEHOLD WASTE - Any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas); does not include brush.

INDUSTRIAL SOLID WASTE - Solid waste resulting from or incidental to any process of industry or manufacturing, or mining or agricultural operations.

INERT MATERIAL - A natural or man-made nonputrescible, nonhazardous material that is essentially insoluble, usually including, but not limited to, soil, dirt, clay, sand, gravel, brick, glass, concrete with reinforcing steel, and rock.

IN SITU - In natural or original position.

LANDFILL - A solid waste management unit where solid waste is placed in or on land and which is not a pile, a land treatment unit, a surface impoundment, an injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit.

LANDFILL CELL - A discrete area of a landfill.

LEACHATE - A liquid that has passed through or emerged from solid waste and contains soluble, suspended, or miscible materials removed from such waste.

LIQUID WASTE - Any waste material that is determined to contain "free liquids" as defined by United States Environmental Protection Agency (EPA) Method 9095 (Paint Filter Test), as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Publication Number SW-846).

LOWER EXPLOSIVE LIMIT - The lowest percent by volume of a mixture of explosive gases in air that should propagate a flame at 25 degrees Celsius and atmospheric pressure.

MEDICAL WASTE - Treated and untreated special waste from health care-related facilities that is comprised of animal waste, bulk blood, bulk human blood, bulk human body fluids, microbiological waste, pathological waste, and sharps. Health care-related facilities do not include:

(A) single or multi-family dwellings; and

(B) hotels, motels, or other establishments that provide lodging and related services for the public.

MUNICIPAL SOLID WASTE - Solid waste resulting from or incidental to municipal, community, commercial, institutional, and recreational activities, including garbage, rubbish, ashes, street cleanings, dead animals, abandoned automobiles, and all other solid waste other than industrial solid waste.

MUNICIPAL SOLID WASTE FACILITY - All contiguous land, structures, other appurtenances, and improvements on the land used for processing, storing, or disposing of solid waste. A facility may be publicly or privately owned and may consist of several processing, storage, or disposal operational units, e.g., one or more landfills, surface impoundments, or combinations of them.

NONPOINT SOURCE - Any origin from which pollutants emanate in an unconfined and unchanneled manner, including, but not limited to, surface runoff and leachate seeps.

NUISANCE - Municipal solid waste that is stored, processed, or disposed of in a manner that causes the pollution of the surrounding land, the contamination of groundwater or surface water, the breeding of insects or rodents, or the creation of odors adverse to human health, safety, or welfare.

OPEN BURNING - The combustion of solid waste without:

(A) control of combustion air to maintain adequate temperature for efficient combustion;

(B) containment of the combustion reaction in an enclosed device to provide sufficient residence time and mixing for complete combustion; and

(C) control of the emission of the combustion products.

OPERATE - To conduct, work, run, manage, or control.

OPERATING HOURS - The hours when the facility is open to receive waste, operate heavy equipment, and transport materials on- or off-site.

OPERATING RECORD - All plans, submittals, and correspondence for a municipal solid waste facility required under this chapter; required to be maintained at the facility or at a nearby site.

OPERATION - A municipal solid waste site or facility is considered to be in operation from the date that solid waste is first received or deposited at the facility until the date that the site or facility is properly closed.

OPERATOR - The person(s) responsible for operating the facility or part of a facility.

OWNER - The person that owns a facility or part of a facility.

POINT SOURCE - Any discernible, confined, and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, or discrete fissure from which pollutants are or may be discharged.

POLLUTANT - Contaminated dredged spoil, solid waste, contaminated incinerator residue, sewage, sewage sludge, munitions, chemical wastes, or biological materials discharged into water.

POLLUTION - The man-made or man-induced alteration of the chemical, physical, biological, or radiological integrity of an aquatic ecosystem.

POLYCHLORINATED BIPHENYL (PCB) - Any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances that contains such substance.

POLYCHLORINATED BIPHENYL (PCB) WASTE - Those polychlorinated biphenyls and polychlorinated biphenyl items that are subject to the disposal requirements of 40 Code of Federal Regulations (CFR) Part 761. Substances that are regulated by 40 CFR Part 761 include, but are not limited to: PCB articles, PCB article containers, PCB containers, PCB -contaminated electrical equipment, PCB equipment, PCB transformers, recycled PCB, capacitors, microwave ovens, electronic equipment, and light ballasts and fixtures.

PREMISES - A tract of land with the buildings thereon, or a building or part of a building with its grounds or other appurtenances.

PROCESSING - Activities including, but not limited to, the extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of waste, designed to change the physical, chemical, or biological character or composition of any waste to neutralize such waste, or to recover energy or material from the waste, or render the waste safer to transport, store, dispose of, or make it amenable for recovery, amenable for storage, or reduced in volume.

PUTRESCIBLE WASTE - Organic wastes, such as garbage, wastewater treatment plant sludge, and grease trap waste, that are capable of being decomposed by microorganisms with sufficient rapidity as to cause odors or gases or are capable of providing food for or attracting birds, animals, and disease vectors.

RECYCLABLE MATERIAL - A material that has been recovered or diverted from the nonhazardous

waste stream for purposes of reuse, recycling, or reclamation, a substantial portion of which is consistently used in the manufacture of products that may otherwise be produced using raw or virgin materials. Recyclable material is not solid waste. However, recyclable material may become solid waste at such time, if any, as it is abandoned or disposed of rather than recycled, whereupon it should be solid waste with respect only to the party actually abandoning or disposing of the material.

RECYCLING - A process by which materials that have served their intended use or are scrapped, discarded, used, surplus, or obsolete are collected, separated, or processed and returned to use in the form of raw materials in the production of new products. Except for mixed municipal solid waste composting, that is, composting of the typical mixed solid waste stream generated by residential, commercial, and/or institutional sources, recycling includes the composting process if the compost material is put to beneficial use.

RUN-OFF - Any rainwater, leachate, or other liquid that drains over land from any part of a facility.

RUN-ON - Any rainwater, leachate, or other liquid that drains over land onto any part of a facility.

SALVAGING - The controlled removal of waste materials for utilization, recycling, or sale.

SCAVENGING - The uncontrolled and unauthorized removal of materials at any point in the solid waste management system.

SCRAP TIRE - Any tire that can no longer be used for its original intended purpose.

SEPTAGE - The liquid and solid material pumped from a septic tank, cesspool, or similar sewage treatment system.

SITE - Same as facility.

SLUDGE - Any solid, semi-solid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water-supply treatment plant, or air pollution control facility, exclusive of the treated effluent from a wastewater treatment plant.

SOLID WASTE - Garbage, rubbish, refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, municipal, commercial, mining, and agricultural operations and from community and institutional activities. The term does not include:

(A) solid or dissolved material in domestic sewage, or solid or dissolved material in irrigation return flows, or industrial discharges;

(B) soil, dirt, rock, sand, and other natural or man-made inert solid materials used to fill land if the object of the fill is to make the land suitable for the construction of surface improvements; or

(C) waste materials that result from activities associated with the exploration, development, or production of oil or gas or geothermal resources, unless the waste, substance, or material results from activities associated with gasoline plants, natural gas liquids processing plants, pressure maintenance plants, or re-pressurizing plants and is hazardous waste as defined by the administrator of the United States Environmental Protection Agency under the federal Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended (42 United States Code, §§6901 et seq.), http://www.epa.gov/lawsregs/laws/rcra.html.

SOLID WASTE MANAGEMENT UNIT - A landfill, surface impoundment, waste pile, furnace, incinerator, kiln, injection well, container, drum, salt dome waste containment cavern, land treatment unit, tank, container storage area, or any other structure, vessel, appurtenance, or other improvement on land used to manage solid waste.

SPECIAL WASTE - Any solid waste or combination of solid wastes that because of its quantity, concentration, physical or chemical characteristics, or biological properties requires special handling and disposal to protect the human health or the environment. If improperly handled, transported, stored, processed, or disposed of or otherwise managed, it may pose a present or potential danger to the human health or the environment. Special wastes are:

(A) hazardous waste from conditionally exempt small-quantity generators;

(B) industrial nonhazardous waste;

(C) untreated medical waste;

(D) municipal wastewater treatment plant sludges, other types of domestic sewage treatment plant sludges, and water-supply treatment plant sludges;

(E) septic tank pumpings;

(F) grease and grit trap wastes;

(G) wastes from commercial or industrial wastewater treatment plants; air pollution control facilities; and tanks, drums, or containers used for shipping or storing any material that has been listed as a hazardous constituent in 40 Code of Federal Regulations (CFR) Part 261, Appendix VIII but has not been listed as a commercial chemical product in 40 CFR §261.33(e) or (f);

(H) slaughterhouse wastes;

(I) dead animals;

(J) drugs, contaminated foods, or contaminated beverages, other than those contained in normal household waste;

(K) pesticide (insecticide, herbicide, fungicide, or rodenticide) containers;

(L) discarded materials containing asbestos;

(M) incinerator ash;

(N) soil contaminated by petroleum products, crude oils, or chemicals in concentrations of greater than 1,500 milligrams per kilogram total petroleum hydrocarbons;

(O) used oil;

(P) waste from oil, gas, and geothermal activities when those wastes are to be processed, treated, or disposed of at a solid waste management facility;

(Q) lead acid storage batteries; and

(R) used-oil filters from internal combustion engines.

STORAGE - The keeping, holding, accumulating, or aggregating of solid waste for a temporary period, at the end of which the solid waste is processed, disposed, or stored elsewhere.

(A) Examples of storage facilities are collection points for:

(i) only nonputrescible source-separated recyclable material;

(ii) consolidation of parking lot or street sweepings or wastes collected and received in sealed plastic bags from such activities as periodic citywide cleanup campaigns and cleanup of rights-of-way or

roadside parks; and

(iii) accumulation of used or scrap tires prior to transportation to a processing or disposal facility.

(B) Storage includes operation of pre-collection or post-collection as follows:

(i) pre-collection--that storage by the generator, normally on his premises, prior to initial collection; or

(ii) post-collection--that storage by a transporter or processor, at a processing facility, while the waste is awaiting processing or transfer to another storage, disposal, or recovery facility.

STRUCTURAL COMPONENTS - Liners, leachate collection systems, final covers, run-on/run-off systems, and any other component used in the construction and operation of the municipal solid waste landfill that is necessary for protection of human health and the environment.

SURFACE IMPOUNDMENTS - A natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials) that is designed to hold an accumulation of liquids; examples include holding, storage, settling, and aeration pits, ponds, and lagoons.

SURFACE WATER - Surface water as included in water in the state.

TRANSPORTER - A person that collects, conveys, or transports solid waste; does not include a person transporting his or her household waste.

UNCOMPACTED WASTE - Any waste that is not a liquid or a sludge, has not been mechanically compacted by a collection vehicle, has not been driven over by heavy equipment prior to collection, or has not been compacted prior to collection by any type of mechanical device other than small, in-house compactor devices owned and/or operated by the generator of the waste.

UNLOADING AREA - Areas designated for unloading, including all working faces, active disposal areas, storage areas, and other processing areas.

VECTOR - An agent, such as an insect, snake, rodent, bird, or animal capable of mechanically or biologically transferring a pathogen from one organism to another.

WASHOUT - The carrying away of solid waste by waters.

WHITE GOODS - Discarded large household appliances such as refrigerators, stoves, washing machines,

or dishwashers.

WORKING FACE - Areas in a landfill where waste has been deposited for disposal but has not been covered.

YARD WASTE - Leaves, grass clippings, yard and garden debris, and brush, including clean woody vegetative material not greater than six inches in diameter, that results from landscaping maintenance and land-clearing operations. The term does not include stumps, roots, or shrubs with intact root balls.

APPENDIX B

FORMS

WASTE PROFILE FORM

Generator's Name: _____
Generator's Address: _____
Generator Contact: _____
Phone: _____ Fax: _____
Description of Waste: _____
_____

Description of Process Generating Waste: _____
_____

Volume of Waste: _____

Supplemental Information Attached: _____

(i.e., Analytical Data, Material Safety Data Sheet, Process Knowledge, etcetera)

Physical Characteristic of Waste: □ Solid □ Liquid □ Powder □ Semi-Solid

Free Liquid: □ Yes □ No

Flash Point: _____ pH: _____

Chemical Composition: _____ _____

(total must add to 100%) _____ _____

_____ _____

_____ _____

Total = 100%

Generator Certification

I certify that the above information is correct and complete to the best of my knowledge, and the Waste is not hazardous as per 40 CFR Part 261. I, _____, am employed by
(Name)
_____, and am authorized to sign this request for:
(Company Name)

_____ _____ _____

(Company Name) (Signature) (Date)

WASTE INSPECTION/SCREENING FORM

Inspection No.: _____

Date: _____

Name of Inspector: _____

Type of Inspection: _____
(i.e., random screening, suspected unauthorized waste, etcetera)

Transporter/Generator Information:

Name: _____
Address: _____
Contact Person: _____
Phone: _____ FAX: _____

Type of Vehicle:

Source of Load:

Size of Load:

Contents of Load: _____
_____
_____

Indicators of Prohibited Waste: _____
_____
_____

Inspection Comments: _____
_____
_____
_____
_____

WASTE DISCREPANCY REPORT FORM

Date: _____

Name of Inspector: _____

Transporter / Generator Information:

- Name: _____
- Address: _____
- Contact Person: _____
- Phone: _____ FAX: _____

Waste Description: _____

_____

_____

_____

_____

_____

Comments: _____

_____

_____

_____

_____

APPENDIX C

APPLICABLE SOLID WASTE LEGISLATION

Costa Rica

Ministry of Environment, Energy and Telecommunications Solid Waste Regulations:
http://www.minae.go.cr/acerca/info_general/marco_juridico.html
This link only lists the regulations but does not provide their text.

The major Solid Waste Regulation is:
Decreto No. 27001-MINAE, Reglamento para el Manejo de Desechos Sólidos .Gaceta 101, del 27 de mayo de 1998,

Comprehensive Waste Management Law No. 8839 (Oct 2010) from the Ministry of Health:
http://www.minaet.go.cr/Ley8839/minsalud_ley2%20con%20ajustes%2012_10_10.pdf

Reglamento de Rellenos Sanitarios
http://www.ministeriodesalud.go.cr/index.php/normativas-rellenos-sanitarios-ms

EL Salvador

Ministry of Environment and Natural Resources:
http://www.marn.gob.sv/index.php?option=com_content&view=article&id=144:legislacion-y-reglamentos&catid=98:desechos-solidos-y-materiales-peligrosos&Itemid=171

APPENDIX D

AUDIT/INSPECTION CHECKLIST

INSPECTION AND AUDIT CHECKLIST FOR NEW SANITARY LANDFILL CONSTRUCTION

FACILITY

FACILITY NAME:_____

OWNER/OPERATORS NAME:_____

LOCATION:_____

OWNER/OPERATOR'S REPRESENTATIVE NAME:_____

CONTACT NUMBER:_____

INSPECTION/AUDIT

DATE OF AUDIT/INSPECTION:_____

INSPECTOR NAME:_____

DATE OF LAST INSPECTION:_____

WEATHER CONDITIONS:_____

ITEM NO.	DESCRIPTION	COMPLETED YES/NO/N.A.	DATE OF COMPLETION	COMMENTS
1	**Landfill Recordkeeping**			
1.1	Liner Evaluation Report for Current Disposal Cell	Prior to Disposal in Landfill Cell	One per landfill cell	
1.2	Location Restriction Demonstrations	Prior to Constructing Landfill Cell	At least once per event	
1.3	Prohibited Waste Inspection Records, Training and Receipt Notification Procedures	Per Occurrence	Per Occurrence	
1.4	Landfill Gas Monitoring Results	Quarterly	Quarterly	
1.5	Remediation Plans for Landfill Gases	Per Occurrence	Per Occurrence	
1.6	Unit Design Documentation for Leachate or Gas Condensate Placement	As Required	As Required	
1.7	Groundwater Monitoring, Testing & Analytical Data	Per Occurrence	Per Occurrence	
1.8	Closure and Post-Closure Care Plans	Submittal of Permit Application	Submittal of Permit Application	
1.9	Post-Closure Monitoring, Testing and Analytical Data	Per Occurrence	Per Occurrence	
1.10	Cost Estimates and Financial Assurance Documentation for Closure and Post-Closure of Landfill	Annually	Annually	
1.11	Facility Operation, Permit	Per Occurrence	Per Occurrence	

ITEM NO.	DESCRIPTION	COMPLETED YES/NO/N.A.	DATE OF COMPLETION	COMMENTS
	Modification, Approvals, and Technical Assistance Correspondence & Responses			
1.12	Special Waste Manifests, Trip Tickets and All Other Documents Relating to Special Waste	Per Occurrence	Per Occurrence	
1.13	Other Documents Specified in the Permit or by the Environmental Agencies	As Needed	As Needed	
1.14	Personnel Training Records	As Needed	As Needed	
1.15	Unauthorized Material Removal	Per Occurrence	Per Occurrence	
1.16	Landfill Marker Inspections	Monthly	Monthly	
1.17	Landfill Gas Management Reports and Submittals	Per Occurrence	Per Occurrence	
1.18	Cover Inspection Record	Daily	Daily	
1.19	Regulated Asbestos Containing Material Acceptance Records	Per Occurrence	Per Occurrence	
1.20	Landfill Access Road Records	Monthly	Monthly	
1.21	Access Control Inspections and Maintenance	Monthly	Monthly	
1.22	Notices for Access Control Breaches and Repairs	Per Occurrence	Per Occurrence	
1.23	Fire Occurrence Notices	Per Occurrence	Per Occurrence	
1.24	Ponded Water Records	Monthly	Monthly	
1.25	Landfill Inspection and Maintenance Records	Per Occurrence	Per Occurrence	
1.26	Daily Log of Litter and Debris Pickup along Public Road	Daily	Daily	
1.27	Training Records for All Employees	Per Occurrence	Per Occurrence	
1.28	Records Management System (Facility Operating Record)	Per Occurrence	Per Occurrence	
2	**Personnel**			
2.1	Landfill Manager	On Site When Landfill Operating	On Site When Landfill Operating	
2.2	Equipment Operator	On Site When Landfill Operating	On Site When Landfill Operating	
2.3	Gate Attendant	On Site When Landfill Operating	On Site When Landfill Operating	
2.4	Laborer	On Site When Landfill Operating	On Site When Landfill Operating	
3	**Equipment**			
3.1	Landfill Compactor	On Site When Landfill Operating	On Site When Landfill Operating	

ITEM NO.	DESCRIPTION	COMPLETED YES/NO/N.A.	DATE OF COMPLETION	COMMENTS
3.2	Dozer	On Site When Landfill Operating	On Site When Landfill Operating	
3.3	Earth Moving Equipment (Scraper or Excavator and Dump Truck)	On Site When Landfill Operating	On Site When Landfill Operating	
3.4	Water Truck	On Site When Landfill Operating	On Site When Landfill Operating	
3.5	Pickup Truck	Optional	Optional	
3.6	Water Pump	On Site When There are Excavations Requiring Dewatering	As Necessary	
3.7	Other Equipment	Optional	Optional	
4	**General Landfill Operating**			
4.1	Personnel Training			
4.1.1	Initial Employee Training Records	At Initial Hiring	Once Per Employee	
4.1.2	Annual Employee Training Records	Annually	At Least Once Per Year	
4.2	Control of Prohibited Waste			
4.2.1	Prohibited Waste Sign	Initial Landfill Construction	Continually While Operating	
4.2.2	Random Inspections	Weekly	5 Times Per Week	
4.2.3	Personnel Training in Prohibited Waste	Annually	At Least Once Per Year	
4.2.4	Remediation of Prohibited Waste	Per Occurrence	Per Occurrence	
4.2.5	Liquids Restriction	Continually While Operating	Continually While Operating	
4.3	Fire Protection Plan			
4.3.1	Personnel Training in Fire Protection	Annually	At Least Once Per Year	
4.3.2	Fire Extinguishers	Continually While Operating	Inspect Annually	
4.3.3	No Burning of Solid Waste	Continually While Operating	Continually While Operating	
4.3.4	No Smoking at Active Areas of Landfill	Continually While Operating	Continually While Operating	
4.3.5	Soil Stockpile Sufficient to Cover Working Face	Continually While Operating	Continually While Operating	
4.4	Access Control			
4.4.1	Fence or Other Barrier	Continually While Operating	Continually While Operating	
4.4.2	Lockable Gate	Continually While Operating	Continually While Operating	
4.4.3	Inspection Records	Monthly	Monthly	

ITEM NO.	DESCRIPTION	COMPLETED YES/NO/N.A.	DATE OF COMPLETION	COMMENTS
4.5	Unloading of Waste			
4.5.1	Municipal Solid Waste Working Face 100 meters x 50 meters maximum size	Continually While Operating	Continually While Operating	
4.5.2	Brush, Wood Active Area	Optional	Optional	
4.5.3	Liquid Waste Processing Area	Optional	Optional	
4.5.4	Asbestos Disposal Records	Per Event	Continually While Operating	
4.5.5	Construction and Demolition Waste Area	Optional	Optional	
4.5.6	Tire Storage and Processing Area	Optional	Optional	
4.5.7	Brush, Wood, Tire, Construction and Demolition Waste, and Recycling Active Areas free of Putrescible Material	Optional	Continually While Operating	
4.6	Hours of Operation	As Required	As Required	
4.6.1	Days and Hours of Operation Posted at Landfill Entrance	Initial Landfill Construction	Continually While Operating	
4.7	Landfill Sign			
4.7.1	Sign Minimum Size 1 Meter x 1 Meter	Initial Landfill Construction	Continually While Operating	
4.7.2	Letters Minimum Size 7 cm	Initial Landfill Construction	Continually While Operating	
4.7.3	Name of Landfill, Solid Waste Landfill, Hours and Days of Operation, 24 Hour Emergency Contact Telephone Number	Initial Landfill Construction	Continually While Operating	
4.8	Control of Windblown Solid Waste and Litter			
4.8.1	Windblown Litter at Landfill Collected and Returned to Working Face	Daily	Once Per Day	
4.8.2	Litter Fences at Working Face	At Discretion of Landfill Manager	As Needed	
4.9	Easements			
4.9.1	No Waste Unloading, Storage, Disposal, or Processing Within Any Easement	Continually While Operating	Continually While Operating	
4.9.2	No Waste Unloading, Storage, Disposal, or Processing Within 7 Meters of the Centerline of Any Easement	Continually While Operating	Continually While Operating	
4.10	Landfill Markers and Benchmarks			
4.10.1	Black Landfill Boundary Markers	Initial Landfill Construction	Continually While Operating	
4.10.2	Green Easement Markers	Initial Landfill Construction	Continually While Operating	

ITEM NO.	DESCRIPTION	COMPLETED YES/NO/N.A.	DATE OF COMPLETION	COMMENTS
4.10.3	White Site Grid Markers	Initial Landfill Construction	Area to Be Filled For Next Year	
4.10.4	Red Constructed Landfill Liner Markers	At the Completion of Each Landfill Liner Segment Construction	With Each Liner Construction	
4.10.5	Site Benchmark	Initial Landfill Construction	Continually While Operating	
4.11	Materials Along Route to Landfill			
4.11.1	Sign at Entrance Requiring Loads to be Covered or Enclosed	Initial Landfill Construction	Continually While Operating	
4.11.2	Inspect Roadways used to Access Landfill within 3 Kilometers and Pick Up all Litter and Trash	Daily	Daily	
4.12	Disposal of Large Items			
4.12.1	Large Items Receive Special Handling	Continually While Operating	Continually While Operating	
4.12.2	No Items with Chlorinated Fluorocarbons Accepted for Disposal	Continually While Operating	Continually While Operating	
4.13	Air Criteria			
4.13.1	Obtain Any Required Air Permits	Continually While Operating	Continually While Operating	
4.14	Odor Management Plan			
4.14.1	Odors Controlled to Prevent Off Site Migration	Continually While Operating	Continually While Operating	
4.14.2	Dead Animals Covered with 1 Meter Waste or 60 Centimeters of Soil	Per Occurrence	Per Occurrence	
4.14.3	Ponded Water Controlled	Continually While Operating	Continually While Operating	
4.14.4	Daily or Alternate Daily Cover	Daily	Daily	
4.15	Disease Vector Control			
4.15.1	Vectors (flies, rodents, mosquitoes) Minimized	Continually While Operating	Continually While Operating	
4.15.2	Ponded Water Controlled	Continually While Operating	Continually While Operating	
4.15.3	Birds Minimized	Continually While Operating	Continually While Operating	
4.16	Landfill Access Roads			
4.16.1	Landfill Access Roads Provided from Public Road to Unloading Areas	Initial Landfill Construction	Continually While Operating	
4.16.2	Mud Tracking onto Public Roads Minimized	Continually While Operating	Continually While Operating	
4.16.3	Mud Cleaned from Public Roads	Mud Tracked Onto Public Access Roads	Daily	

ITEM NO.	DESCRIPTION	COMPLETED YES/NO/N.A.	DATE OF COMPLETION	COMMENTS
4.16.4	On-Site Access Roads Controlled for Dust	Continually While Operating	Continually While Operating	
4.16.5	On-Site Access Roads Cleaned of Litter and Debris	Daily	Daily	
4.17	Stormwater Management			
4.17.1	Stormwater Facilities Designed and Constructed	Continually While Operating	Continually While Operating	
4.17.2	Erosion of Stormwater Facilities	After Significant Rainfall Events	Continually While Operating	
4.17.3	Sediment Accumulation in Stormwater Facilities	After Significant Rainfall Events	Continually While Operating	
4.18	Salvaging and Scavenging			
4.18.1	Scavenging Not Allowed	Continually While Operating	Continually While Operating	
4.18.2	Salvaging or Recycling of Materials Allowed as Directed by the Landfill Manager	As Allowed By Landfill Manager	As Directed	
4.18.3	Salvaging Does Not Interfere With the Prompt Sanitary Disposal of Waste or Create Public Health Nuisances	Continually While Operating	Continually While Operating	
4.18.4	Special Wastes Are Not Salvaged	Continually While Operating	Continually While Operating	
4.19	Landfill Gas Control			
4.19.1	Landfill Boundary Monitored for Lower Explosive Limit	Quarterly	Quarterly	
4.19.2	Landfill On-Site Buildings Monitored for 25 Percent Lower Explosive Limit	Quarterly	Quarterly	
4.19.3	Permanent Landfill Gas Probes Installed Along Landfill Boundary	Initial Landfill Construction	Expanded as Landfill Expands	
4.19.4	Landfill Gas Remediation	Per Occurrence	Per Occurrence	
4.20	Oil, Gas and Water Wells			
4.20.1	Oil, Gas and Water Wells that are Not Active or In Use are Plugged and Abandoned	Per Occurrence	Per Occurrence	
4.21	Compaction	Monthly	Monthly	
4.21.1	Waste Compacted in Maximum 60 Centimeter Layers	Continually While Operating	Continually While Operating	
4.21.2	Waste Compacted with At Least 4 Passes of Landfill Compactor	Continually While Operating	Continually While Operating	
4.22	Landfill Cover			
4.22.1	15 Centimeters of Daily Cover Applied	Once a Day When Operating	Daily	
4.22.2	Alternate Daily Cover Applied	When Applied	Daily	
4.22.3	30 Centimeters of Intermediate Cover	When Applied	Daily, When Applied	
4.22.4	Final Cover Construction	Area Reaches	Daily, When	

ITEM NO.	DESCRIPTION	COMPLETED YES/NO/N.A.	DATE OF COMPLETION	COMMENTS
		Final Waste Grades	Applied	
4.22.5	Cover Log (Daily, Alternate Daily, Intermediate and Final Cover)	Once a Day When Operating	Daily	
4.22.6	Erosion of Intermediate and Final Cover Repaired	When Erosion is Found	Monthly	
4.23	Ponded Water			
4.23.1	Areas of Ponded Water Repaired to Remove Ponding Conditions	When Ponding Conditions are Found	Monthly	
4.23.2	Ponded Water is Removed	When Ponded Water is Found	Monthly	
4.24	Disposal of Special Waste			
4.24.1	Special Waste Information Including: Generator's Information, Description of Waste, Description of Process, Volume, Waste/Chemical Composition, and Physical Characteristics	Per Each Waste Stream	Annually	
4.25	Disposal of Industrial Waste			
4.25.1	Landfill Manager's Acceptance of Industrial Waste	Per Each Waste Stream	At Landfill Manager's Discretion	
4.26	Leachate System Maintenance			
4.26.1	Leachate System Operational	As Required	Monthly or As Required	
4.27	Leachate and Gas Condensate Recirculation			
4.27.1	Leachate Recirculated	Per Occurrence	Per Occurrence	
4.27.2	Gas Condensate Recirculated	Per Occurrence	Per Occurrence	

OTHER COMMENTS